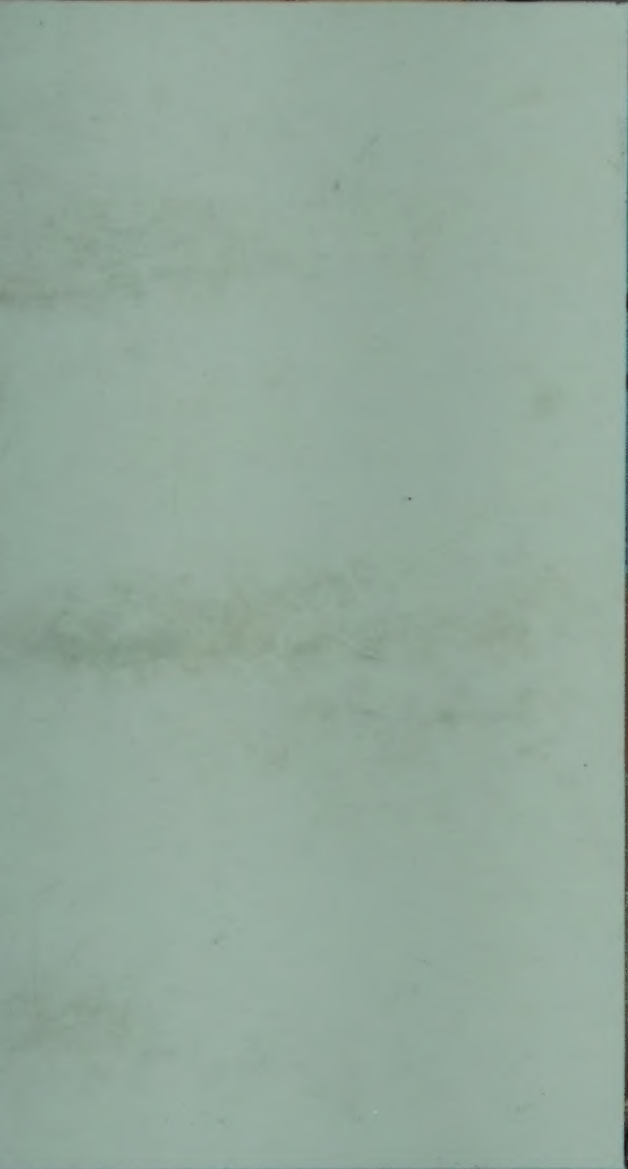
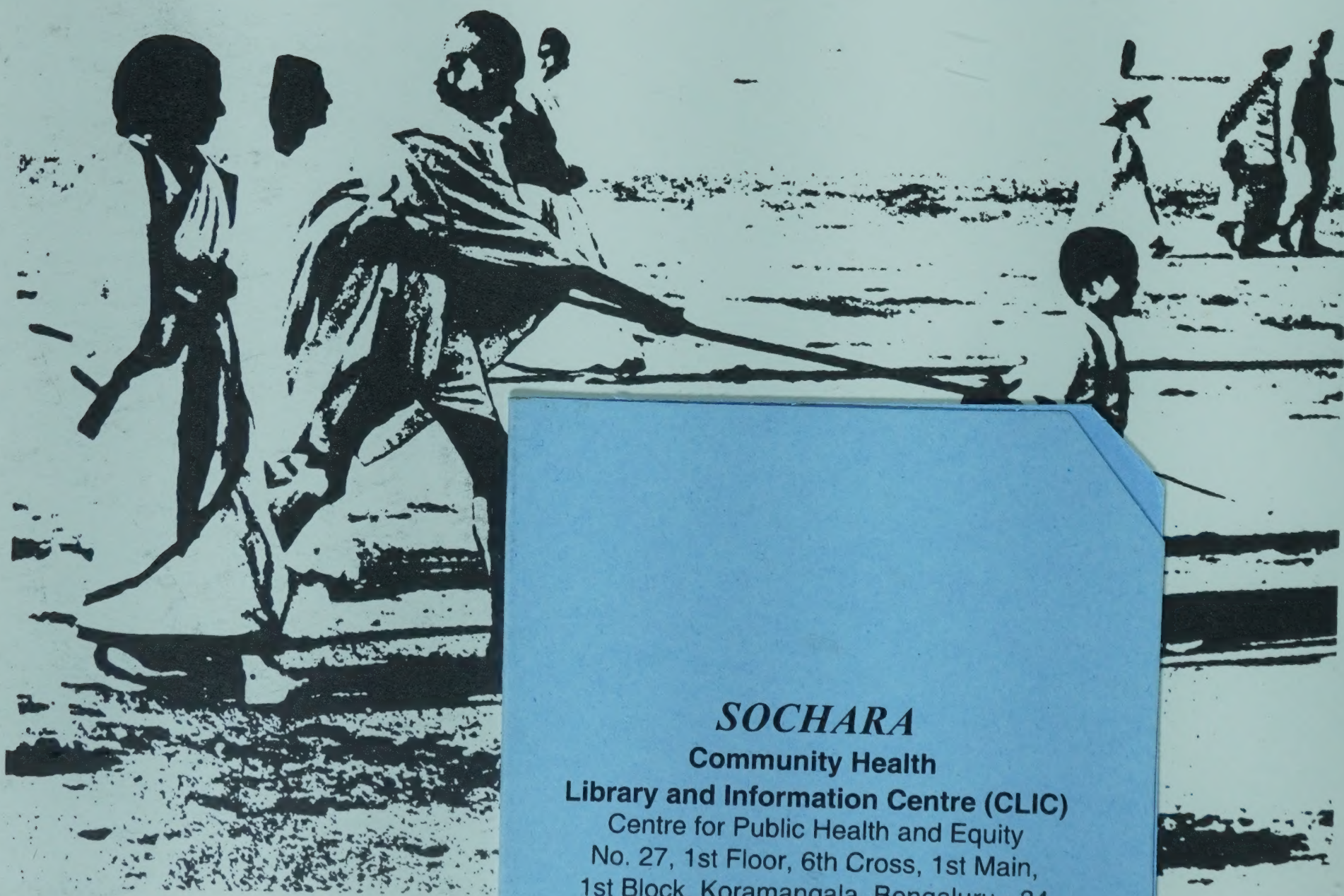




An Analysis of the Situation of Children in India



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An Analysis of the Situation of Children in India



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Foreword

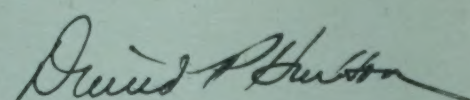
Of the more than 270 million children of India, the number who have access to an essential minimum of nutrition, health care and learning opportunities may be less than half. Indeed the effects of ignorance and ill-health seem to have spread even wider than the immediate results of poverty like lack of food.

This publication is an attempt at contributing to an understanding of the extent, nature, correlations and consequences of the different factors that determine children's development. It is part of the preparation for a renewed social response to the current situation of children.

The data on which the analysis is based are derived mostly from the official sources of government and partly from published findings of professional research. A small team drawn from the programme planning and editorial wings of the UNICEF Regional Office, who prepared the document, has tried to interpret the data in relation to the national policy framework for social and economic development. These views do not necessarily reflect the official UNICEF position.

The improvement of the quality of child life is clearly a function of social and economic development. The present analysis suggests the need to accord equal priority to complementing development concerns: economic support, access to nutrition, safe sanitation, means of health, family planning awareness, educational opportunities, participatory communication and, underlying all these, social equity. It should be more productive, perhaps easier, to promote them together than separately.

Situation analysis in a context of change is a continuing process. By recording it in a document, we hope to share it with all who are concerned and thereby to refine it as a tool of programming for children.



New Delhi
April 1984

David P Haxton
Regional Director of UNICEF
for South Central Asia

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Chapter 1

The Economy

The situation of children and its improvement is directly related to the structure and performance of the economy. Economic growth shared equitably is a condition for people's well-being. The human capital and material resources of India have to be liberated in support of the development of *all*, particularly children. The following analysis confirms the potential and the possibility, despite the situational adversities facing children and their families and the structural weakness of the economy.

1 Rate of growth

Except during the years of drought or other unforeseen setbacks, the average annual growth rate of the gross national product (GNP) at 1970–71 prices, has been, through different Five Year Plans: 3.6 per cent during the First Plan (1951–56); four per cent during the Second Plan (1956–61); 2.5 per cent during the Third Plan (1961–66); 4.1 per cent during the “plan holiday” (1966–69); 3.4 per cent during the Fourth Plan (1969–74) and five per cent during the Fifth Plan (1974–79). After a slump in the non-plan year of 1979–80, which saw a severe drought, the economy recovered in the first year of the Sixth Plan (1980–85) registering a growth of nearly eight per cent. This was followed by 5.2 per cent in 1981–82 and around two per cent in 1982–83 which was a bad agricultural year.

2 Progress in agriculture

Agriculture is the dominant sector of the economy with 70 per cent of the people dependent on it for their livelihood. The foodgrain production was about 142 million tonnes in 1983, the fourth highest in the world. Foodgrain imports, mainly to maintain buffer stocks, were less than one per cent of the total availability, compared to 10–15 per cent in the late Sixties.

In absolute terms, foodgrain production, which was around 100 million tonnes in the mid-Seventies, reached 133 million tonnes by 1981–82 and an estimated 145 million tonnes in 1983–84. The bulk of the foodgrain production is accounted for by wheat and rice where the yield

per hectare has been rising at an annual growth rate of 1.4 per cent between 1970–71 and 1981–82. The area under foodgrain cultivation has increased only marginally from the level of 125 million hectares in the early Seventies. Coarse grains like bajra and maize, consumed by the economically weaker classes, and pulses which are their main source of protein, have however shown a lower yield level in 1981–82 than a decade earlier.

Among the notable features on the farm front are the increase in the area under high yield variety seeds, at nearly nine per cent per annum over the past decade, to reach 48 million hectares in 1982–83; and the steady expansion by 17.7 per cent per annum over this period in the consumption of chemical fertilizers, reaching 6.4 million tonnes in 1982–83. Three-fourths of this quantity are produced in India. However, to make the most of these two inputs, a faster extension of the area under irrigation is necessary. The average annual rate of such expansion over the past decade has been 3.5 per cent, leading to a cumulative use of 58.5 million hectares in 1982–83, against a created potential of 63.3 million hectares.

Another aspect of the agricultural situation is the uneven growth rates in different parts of the country, the narrowing land: man ratio and the declining farm labour productivity. The progress of Indian agriculture, and therefore of the economy, hinges on applying the lessons of the relatively limited number of high-growth, high-productivity districts to the remaining majority of them.

3 Industrial production

The share of agriculture in GNP (at 1970–71 prices) fell from around 50 per cent in 1971–72 to below 42 per cent in 1981–82. The tertiary sector of services, including transport and communications, increased its share of GNP from 31 per cent to 37 per cent during this period. Though the share of industry as a proportion of the national product has not increased significantly beyond 20–21 per cent in the past decade, industrial

production has expanded substantially; the general index having risen by 65 per cent between 1971 and 1981 at an annual compound growth rate of about 4.7 per cent.

The progress is less impressive in terms of per capita consumption. For example, the consumption of edible oil increased marginally from 3.2 kg to 3.8 kg per person between 1960–61 and 1980–81. The per capita annual consumption of cloth during these twenty years has not increased at all beyond the modest level of 15 metres per person. Cloth production increased by only 26 per cent in the 10 years upto 1980–81 and actually declined by nearly six per cent over the next two years. Interestingly, production in the decentralized powerloom and handloom sectors has grown faster than that of the mills. The consumption of sugar presents a mixed picture: having risen from 4.7 kg to 7.3 kg during the Sixties, it has remained stagnant in the Seventies. The aggregate sugar production rose by about 40 per cent between 1970–71 and 1980–81. In the following two years there has been a further rapid expansion of nearly 60 per cent in production, far exceeding the rated capacity.

Domestic consumption of electricity shows a more positive trend; the per capita figure doubled from 3.4 kwh in 1960–61 to seven kwh in 1970–71 and to 13.5 kwh in 1980–81. Electricity generation increased by about 95 per cent in the decade ending 1980–81, and by another 17 per cent in the next two years, to reach 139.5 billion kwh.

The step-up in production of major products like coal and steel since 1970–71 has been modest: 49 per cent for coal reaching 130 million tonnes; 41 per cent for ingot steel reaching 10.6 million tonnes in 1982–83. Commercial motor vehicles fared better, production rising at the rate of 5.2 per cent a year between 1970 and 1981, and growing by another 20 per cent in the next two years. This is in contrast to the tardy rate of railway capacity expansion.

Given the high price of petroleum, a notable success has been in the crude oil production which increased by 53 per cent in the 10 years ending 1980–81, followed by even faster progress during 1981–83 when production almost doubled to touch 21.1 million tonnes. As a result, the high proportion of imports of petroleum products for domestic consumption has been reduced—from 71 per cent in 1980–81 to 48 per cent in 1982–83 and an expected 35 per cent in 1984–85.

An analysis of industrial performance yields several inferences; among them: frequent failure to achieve planned production targets, and low rates of utilization of capacity. At another level the vital dependence of industry on agriculture be-

comes clear. While chemical industries and metal-based industries grew relatively faster during 1971–81, agro-based industries (which account for a larger proportion of industrial production than these two categories) grew at an average annual rate of only 2.6 per cent over the decade. A similar dependence of industry on agriculture is revealed in the relatively slower rate (46 to 47 per cent) of growth of intermediate and consumer goods industries (which account for over half the total industrial production and in fact cater predominantly to the needs of the agricultural sector), in comparison to basic and capital goods industries which expanded by 88 per cent and 81 per cent respectively during the 1971–81 period. The point is further reinforced if consumer goods are separated into durables and non-durables, the latter growing much slower than the former over the decade (45 per cent as against 62 per cent). For, non-durables are consumed more by the rural agricultural households while durables are consumed mainly by the urban sector. It would thus be fair to say that agricultural growth will be decisive for industrial progress, both for stimulating demand and for ensuring supply.

4 Saving and investment

For nearly 10 years now the Indian economy has consistently maintained a high saving rate of over 20 per cent of GNP and an even higher investment rate which approached 25 per cent of GNP in 1978–79 and again in 1981–82. Over the past three years, the average saving for investment was 24.8 per cent of which 22.8 per cent came from internal savings. In the composition of this internal savings, only 4.8 per cent came from the government sector and 18 per cent was provided by the private sector, mainly the household sector. This is an exceptional pattern among the developing countries.

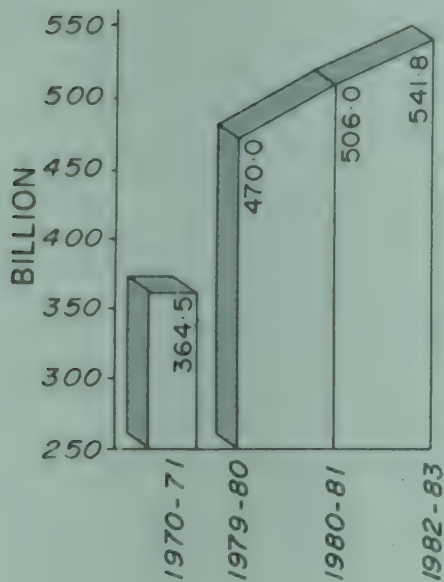
With this order of investment, a higher rate of growth than has been achieved should reasonably be expected. The lower growth rates actually registered have been explained by several factors. For instance, the capital: output ratio is high and rising; it is certainly over three and possibly close to four. This in turn has been attributed to reasons like project cost over-runs, under-utilization of capacities due to poor maintenance, indiscipline and infrastructural bottlenecks.

Another explanation offered for the growth rate being less than what is warranted by the investment rate is the following: While the bulk of the savings is generated in the household sector and is reflected in the high investment rate, a substantial part of the output generated by this sector is not captured in the official estimates of aggregate output. In other words the actual capital:

income

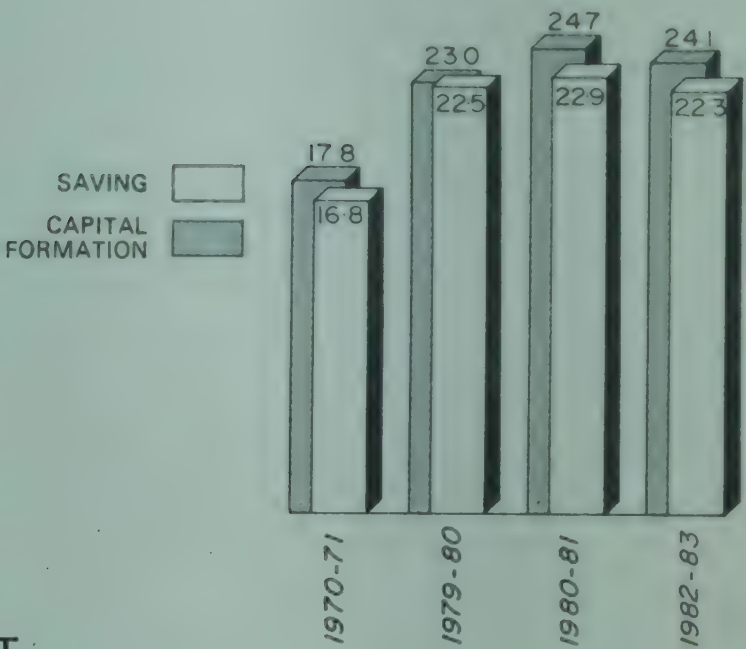
GROSS NATIONAL PRODUCT
AT FACTOR COST

rupees at constant 1970-71 prices



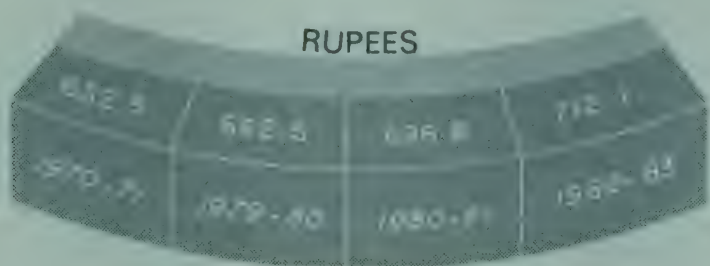
GROSS RATE OF SAVING
AND CAPITAL FORMATION

at current prices



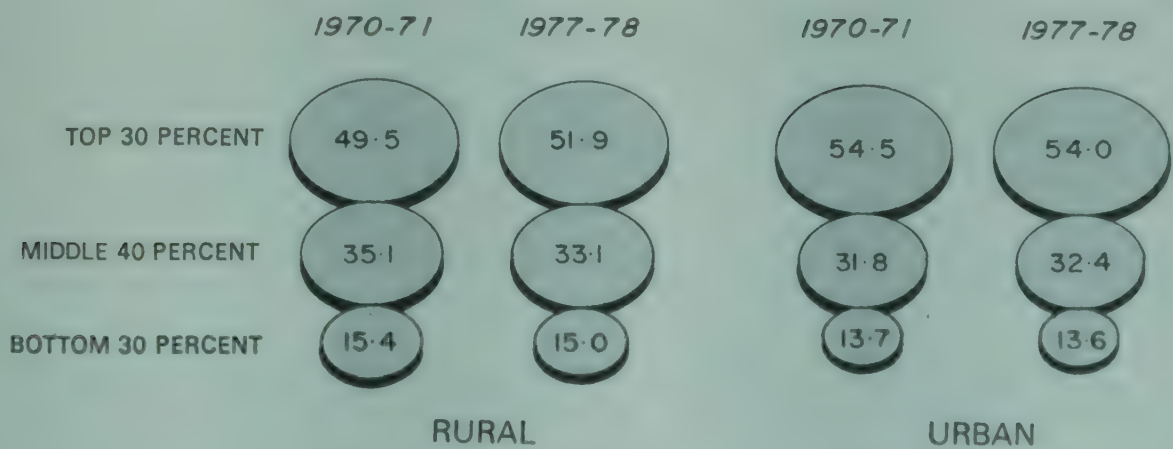
PER CAPITA NET
NATIONAL PRODUCT

rupees at constant 1970-71 prices



PERCENTAGE DISTRIBUTION OF
PER CAPITA PRIVATE CONSUMPTION
BY EXPENDITURE CLASS OF POPULATION

distribution



'Poverty line' is so defined as to run through the midpoint of monthly per capita expenditure class having a daily calorie intake of 2400 per person in the rural areas and 2100 per person in the urban areas. At 1979-80 prices, the midpoints are Rs. 76 (rural) and Rs. 88 (urban). The proportion of India's population below the poverty line that year was 48.44 per cent.

output ratio may be lower than the official estimates and the actual GNP may be higher than the official figure.

5 Balance of payments

India's balance of payments has lately been adverse. The total value of exports rose from about Rs. 64 thousand million in 1979–80 to around Rs. 80 thousand million in 1982–83 (around six per cent of GNP). Over this period imports rose from Rs. 91 thousand million to Rs. 138 thousand million (over 10 per cent of GNP)—leaving a trade deficit of nearly Rs. 58 thousand million in 1982–83. Taking into account the substantial net inflow of invisible earnings, mainly home remittances by emigrant workers, of around Rs. 25 thousand million in 1982–83, the year ended with a current account balance of payments deficit of Rs. 33 thousand million. This deficit would be larger if the balance of payments on capital account is also considered.

All the same, the problem of external payments is not of crisis proportions. For, though the total deficit met from external sources is large in absolute terms it is less than two per cent of GNP. Secondly, though the import bill has lately been twice as much as the export earnings, a few bulk items like petroleum products, fertilizers and edible oils make up its greater part. And, the dependence on imports for these items is declining. For example, petroleum products accounted for as much as 42.6 per cent of all imports in 1980–81. This has come down to 32.6 per cent in 1982–83 and it is expected to be 22.2 per cent by 1984–85. A similar, but less dramatic trend, is discernible in the case of fertilizers. The external payments situation promises an improvement, given the buoyancy that exports have been showing even in the context of global recession. This trend should improve with the gradual upturn in the external markets, though this is conditional on the weather being favourable to farming.

In monetary and banking policies, India's record has been better than many developing countries, despite the mixed performance in the principal sectors of the economy. As a result of anti-inflationary measures including a squeeze on bank credits to the public and the commercial sector and recourse to imports of certain commodities, the wholesale price increase was down to 2.2 per cent from 12 per cent in 1981, though lately the inflation rate has again been moving towards double digit.

6 Mobilizing resources

The low per capita income notwithstanding, the tax level has been rising from 12.4 per cent of GNP in 1970–71 to 16.5 per cent in 1981–82. In view of the government's lead role in economic

development through outlays in the public sector, including the infrastructure, a revenue requirement of this level is understandable.

In this context, at least three issues relevant to longterm economic health, need to be addressed. *First*, the return on investment in the public sector is less than reasonable. In consequence the level of public investment itself tends to be subdued, the case of the railways being an obvious illustration. *Second*, the share of indirect taxes in total tax revenue receipts is over 80 per cent. Indirect taxes are known to have a regressive impact on income distribution because the effective tax rate on private consumption expenditure tends to be only marginally higher for higher income households as compared to those below the poverty line. These taxes favour the better-off and penalize the less fortunate. *Third*, the option for deficit financing in government budgets is constrained by the cumulative thrust of price inflation over the years. This points to the urgent need to mop up resources from the unorganised sector of industry and large scale agriculture, and to improve tax collection. These considerations may find reflected in the Seventh Five Year Plan (1985–90), alongside a renewed emphasis on fewer controls, more competitive pressure, greater productivity and higher cost efficiency.

7 Sectoral outlays

An analysis of the sectoral outlays in successive five-year plans indicates the scale of priorities. The investment in agriculture and allied activities, including irrigation and flood control, has tended to increase over time, the share going up from around 20 per cent in the Third Plan to over 23 per cent in the Sixth Plan. So too the outlay on power which increased from 14.6 per cent to 20 per cent over this period. In contrast, the share of transport and communications was only 16 per cent in the Sixth Plan, compared to 24.6 per cent in the Third Plan.

Social sector investment in India includes education, health and family welfare, water supply, housing and urban development and nutrition. As a proportion to the total investment, social sector expenditure has been 15.7 per cent in the Fourth Plan, 16.1 per cent in the Fifth Plan and 14.4 per cent in the Sixth Plan. In monetary terms, the outlays have risen rapidly: Rs. 24.62 billion in the Fourth Plan; Rs. 63.72 billion in the Fifth Plan; and Rs. 140.3 billion in the Sixth Plan. But the shares of education and health, in proportion to the total plan outlay have declined—from 6.9 per cent in the Third Plan to 2.6 per cent in the Sixth Plan for education; and from 2.6 per cent to 1.8 per cent in the case of health.

In appraising these proportions, at least three

EXPENDITURE ON SOCIAL SERVICES UNDER THE FIVE-YEAR PLANS

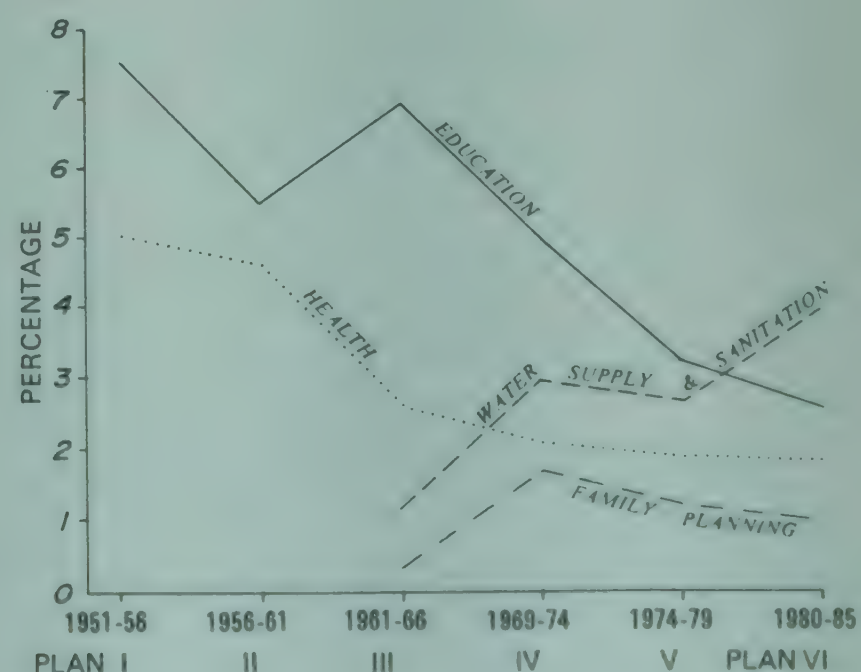
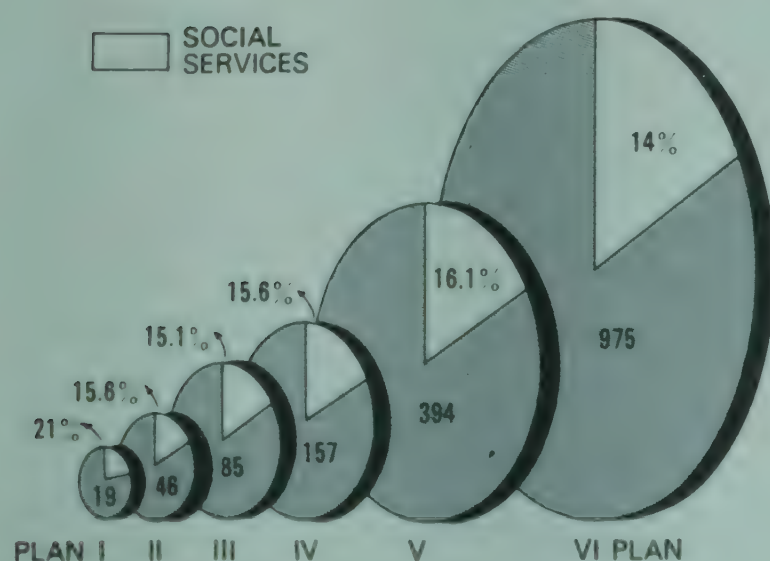
(rupees in millions at current prices)

	1951-56	1956-61	1961-66	1969-74	1974-79	1980-85
PUBLIC SECTOR PLAN OUTLAY	19600	46720	85770	157240	394260	975000
SOCIAL SERVICES	4180 (21)	7440 (15.6)	12960 (15.1)	24620 (15.6)	63720 (16.1)	140350 (14)
EDUCATION	1530 (7.5)	2730 (5.5)	5890 (6.9)	7860 (5.0)	13360 (3.3)	25240 (2.6)
HEALTH	980 (5.0)	2140 (4.6)	2260 (2.6)	3370 (2.1)	7610 (1.9)	18210 (1.8)
FAMILY PLANNING	—	20	250 (0.3)	2780 (1.7)	4920 (1.2)	10100 (1)
HOUSING AND URBAN SERVICES	330 (1.7)	800 (1.7)	1280 (1.5)	2470 (1.6)	11500 (2.9)	24880 (2.5)
WATER SUPPLY & SANITATION	—	—	1060 (1.2)	4740 (3.0)	10920 (2.7)	39220 (4)
SOCIAL WELFARE & RELATED FIELDS	1340 (6.7)	1750 (3.7)	2220 (2.5)	3400 (2.1)	15410 (3.9)	22700 (2.3)

Note: Figures in brackets are percentages to total plan outlay.

EXPENDITURE ON SOCIAL SERVICES AS PROPORTION TO PUBLIC SECTOR OUTLAY (rupees in billions at current prices)

PERCENTAGE OF PLAN OUTLAY



Source : Planning Commission

factors are relevant:

- a large part of the total expenditure in the social sector is reckoned as 'non-developmental' and met from 'non-plan' funds.
- better use of extensive infrastructures already in place is a partial alternative to new investment; and
- a part of the investment for health and education may be absorbed by area-specific multi-sectoral development projects, not reflected in sectoral allocations.

8 Social equity

The net national product at constant (1970–71) prices increased threefold between 1950–51 and 1981–82. While this is impressive in aggregate terms, it marks an increase of only 55 per cent in real per capita income over these three decades. That these averages hide the skewness of distribution is recognised, for example, by the Sixth Plan document which states: "...public policies will have to acquire a sharper distribution focus, in raising the share of the poorer sections

INCOME AND CONSUMPTION AT NATIONAL AND FAMILY LEVELS

At constant 1970–71 prices	1970–71	1979–80	1980–81	1982–83
1 Gross national product at factor cost (Rs. in million)	364,520	470,020	506,030	541,870
2 Gross rate of saving (at current prices)	16.8	22.5	22.9	22.3
3 Gross rate of capital formation (at current prices)	17.8	23.0	24.7	24.1
4 Per capita net national product (Rs)	632.8	662.5	696.8	712.1
5 Per capita private consumption expenditure in domestic market (Rs)	551.5	554.6	590.4	581.9
6 Percentage distribution of (5) on:				
Food	63.7	56.4	58.1	56.6
Cereals and substitutes	28.8	24.3	26.6	24.4
Milk and milk products	7.7	8.4	7.9	8.0
Edible oils	5.2	3.4	3.7	4.4
Meat, fish and egg	2.6	2.6	2.6	2.6
Sugar, gur	4.4	4.3	4.0	4.3
Other foods	15.0	13.4	13.3	12.9
Clothing and footwear	7.2	11.1	9.8	9.5
Fuel and power	3.5	4.1	3.4	3.6
Pan, tobacco and intoxicants	4.6	4.0	3.8	3.4
Health care, education and miscellaneous items	17.3	21.6	20.8	22.0
7 Percentage distribution of (5) by expenditure class of population	1970–71		1977–78	
Rural				
Bottom 30 per cent		15.4		15.0
Middle 40 per cent		35.1		33.1
Top 30 per cent		49.5		51.9
Urban				
Bottom 30 per cent		13.7		13.6
Middle 40 per cent		31.8		32.4
Top 30 per cent		54.5		54.0

Notes

The percentage distribution of consumption expenditure by class of population is based on periodic surveys of household expenditure by the National Sample Survey Organization. The last such completed survey was in 1977–78; the one for 1983–84 is in progress.

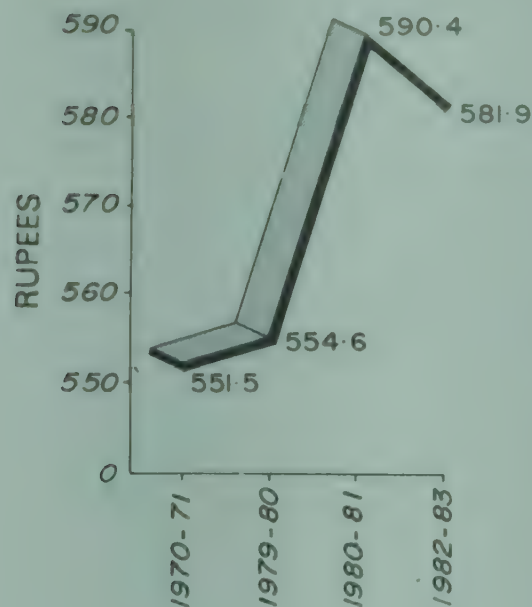
The sources of these data are the Central Statistical Organization's National Accounts and the Planning Commission's Sixth Five Year Plan.

INCOME, DISTRIBUTION, CONSUMPTION AT NATIONAL AND FAMILY LEVELS

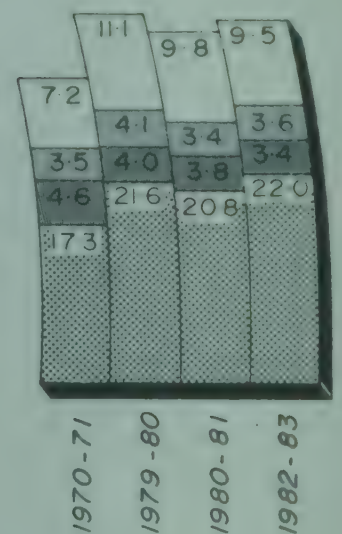
PER CAPITA PRIVATE CONSUMPTION EXPENDITURE IN DOMESTIC MARKET rupees at constant 1970-71 prices

consumption

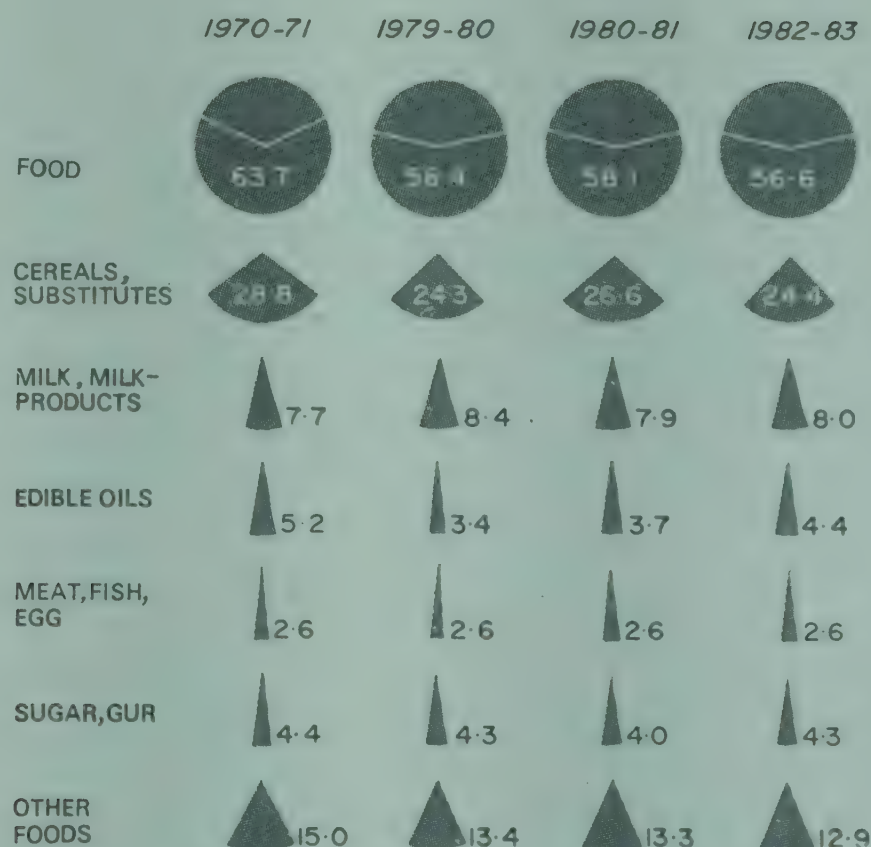
SPENDING ON ITEMS OTHER THAN FOOD percentage of total consumption



CLOTHING, FOOTWEAR
FUEL, POWER
PAN, TOBACCO, INTOXICANTS
HEALTH CARE, EDUCATION, MISCELLANEOUS ITEMS



SPENDING ON FOOD percentage of total consumption



The percentage distribution of consumption expenditure by class of population is based on periodic surveys of household expenditure by the National Sample Survey Organization. The last such completed survey was in 1977-78; the one for 1983-84 is in progress.

The sources of these data are the Central Statistical Organization's National Accounts and the Planning Commission's Sixth Five Year Plan.

in national income and consumption, and in utilization of public services". Acceleration of the rate of growth of the economy is an essential requisite for achieving this social objective, though it is not a sufficient condition.

As may be expected, the strategy of ploughing back an increasing proportion of incremental national income for capital formation, resulted in only an imperceptible improvement of people's living standards, which are among the lowest in the world. This is clear from the marginal rise of seven per cent in per capita private consumption expenditure over the 10 years, 1970–80.

Seen against a depressed economy in 1979–80 (the base year for the Sixth Plan), the turn round in growth and its impact on people's consumption levels in the first three years of the plan look hopeful. While the national product itself recorded an impressive 15 per cent growth over this period, per capita consumption improved by five per cent, despite incessant growth in population.

The per capita availability of cereals and pulses is around 400–500 gms per day, a level which has remained constant over the past 30 years. The annual compound growth rate of about 2.6 per cent for foodgrain production through the Seventies has kept only slightly ahead of the population growth.

As in all poor societies, outlay on food accounts for the bulk of the family budget. However, the decline in its share over the years is significant. An average household spent as much as 64 per cent on food in 1970–71. Today the proportion is about 56 per cent. Within the food basket the importance of cereals (or substitutes for them) has declined from about 29 per cent to less than 21 per cent. But what was saved on cereals does not appear to have gone to increase the consumption of other nourishing food items like milk, sugar and edible oil, but rather to clothing and miscellaneous expenditure.

The inequality of distribution of consumption expenditure remains extremely skewed. The poorest 30 per cent of the people had a share of only about 15 per cent, while the top 30 per cent

claimed more than half the national cake. The contrast between the top and bottom 10 per cent should be even sharper.

There is a parallel inequality not only in income distribution but also in the ownership of a primary resource like land. According to 1979 data, 70 per cent of small land holders with less than two hectares each, own only 24 per cent of cultivated land. The large land holders (with over 10 hectares each), representing only three per cent of the total strength, owned as much as 26 per cent of cultivated land.

The level of urbanization reported by the 1981 census was 23.7 per cent. Though this is not very high, the growth of urban population by 46 per cent during the years 1971–81 was a record for any decade. India's nearly 160 million town dwellers could form the fifth largest country in the world.

This is symptomatic of the more serious problem of unemployment. In mid-1981, the official register showed 16 million jobless people, but the actual figure has been estimated at 30 million or 12 per cent of the total labour force.

A possible move favourable to better economic performance and, over the longer term, to social equity, is the organizational innovation of shifting the emphasis from sector-oriented projects to decentralized area-specific development programmes relevant to relatively homogeneous sub-national units. In such a design it should be possible:

- to develop *agriculture* and *industry* in a complementary and mutually supportive way;
- to balance the needs of people in *village* and *town*, by establishing sustainable rural communities that do not need to migrate to urban areas;
- to make investments in the *public* and *private* sectors pull together towards common or complementing national goals; and
- to correlate the development of the *economic* and *social* sectors to enhance the quality of life of the whole population, especially children.

Chapter II

Demographic Trends

1 Emerging patterns

Every seventh person in the world is an Indian. With only 2.4 per cent of the global area, the country holds nearly 15 per cent of the world's population, over 20 per cent of the share of the developing countries.

The size and growth of population has a strong bearing on the social situation and process of human development. India ranks second only to China with a population of 685 million by the 1981 census, and 720 million as of 1983. But India overtakes China in population growth, the annual addition being 13 to 14 million compared to China's 11.5 million.

Population trends in India from the beginning of the century seem to follow a clear pattern:

- In the first two decades, the population size was almost steady, but with rather high birth and death rates of over 45 per 1,000 persons;
- The next four decades saw a rapid rise

in the rate of population growth from one per cent in the 1920s to 2.2 per cent in the Sixties; the population size increased, because of a rapid decline in the death rate from 36 to 19 over this period, while the birth rate remained high and steady between 42 and 45;

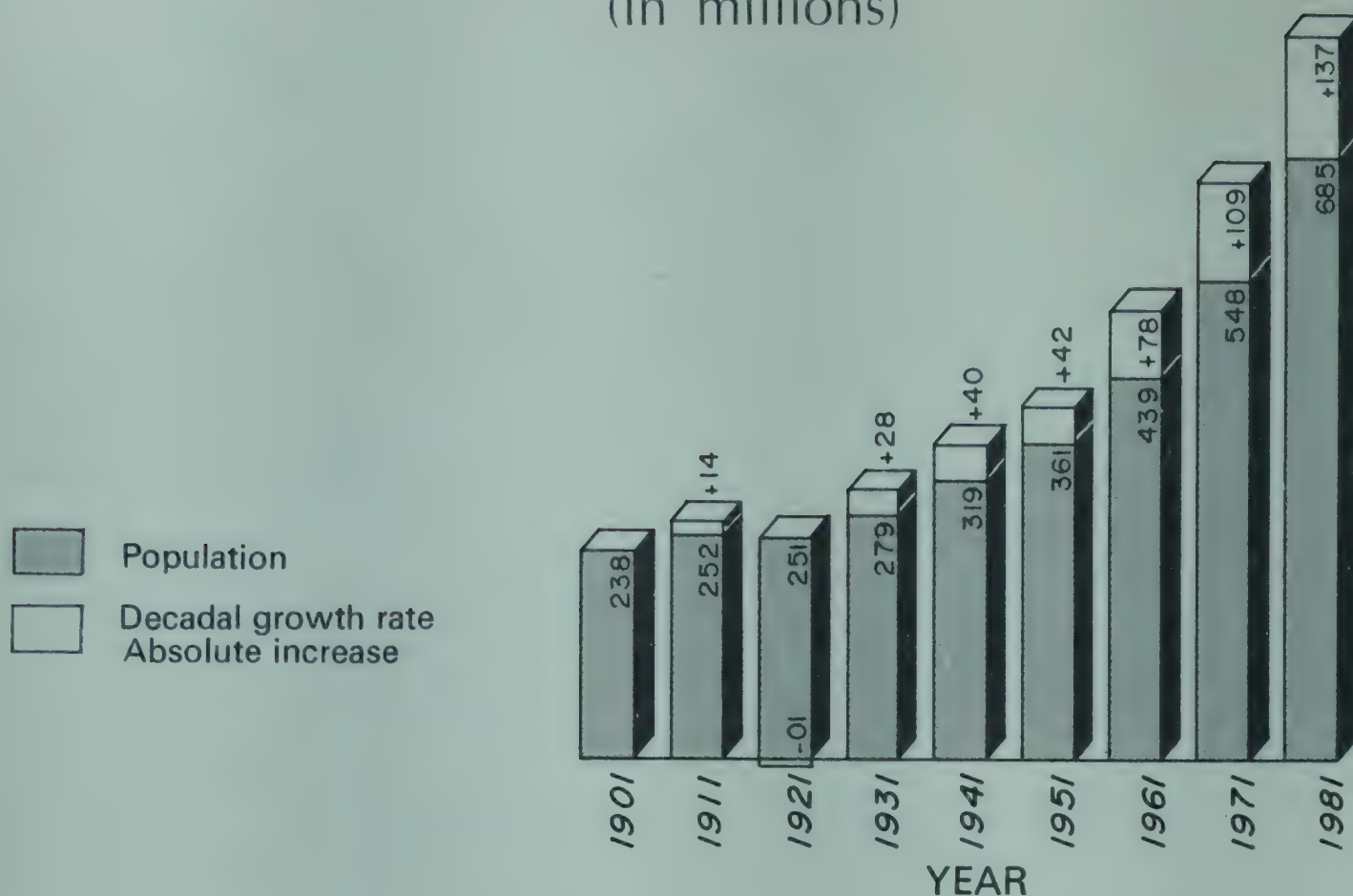
- The third phase, 1971–81, may mark a turning point; the birth rate registered a significant decline from 36.9 in 1971 to 33.3 in 1981, with the growth rate stabilising around 2.5 per cent. But the growth rate is yet to start declining, which will happen when the decline in fertility is faster than the decline in mortality. Even if the trend continues and a replacement fertility level is reached (a net reproduction rate of one, or just over two children per woman) the population does not stabilize for several decades because of the backlog effect or the “bulge” in younger age groups moving towards parenthood.

TABLE 1
Population of India 1901–1981

Year	Population (in '000)	Decadal growth rate	
		Absolute change (in '000)	Percentage
1901	238,396	—	—
1911	252,093	+ 13,697	+ 5.75
1921	251,321	— 772	— 0.31
1931	278,977	+ 27,656	+ 11.00
1941	318,661	+ 39,683	+ 14.22
1951	361,088	+ 42,420	+ 13.31
1961	439,235	+ 77,683	+ 21.51
1971	548,160	+ 108,925	+ 24.80
1981	685,185	+ 137,025	+ 25.00

Source: Census of India 1981.

POPULATION OF INDIA (1901-81) (In millions)



2 Projections

Projections of population growth vary. The World Bank (1982) suggests that even if a net reproduction rate of one be reached by the year 2020, population growth would still continue, although at a slow rate; and the total population would ultimately stabilize around 1660 million in the early decades of the 22nd century. The somewhat conservative estimate of the Working Group on Population Policy set up by the Planning Commission (1980) suggested 900 million by 2000 A.D. (under assumptions of current levels of fertility decline) which would eventually stabilize with a small positive growth around 1200 million by the middle of the 21st century. The projections of the Population Council are 1400 million and 1900 million, for 2000 and 2020 A.D. respectively, (based on certain assumptions on when the net reproduction rate of one will be reached).

Based on a net reproduction rate of one by the year 2000, the following projections of female population can be made:

- The married female population in the age group 15–44 years will increase to 182 million (from 123 million currently);
- Females in peak reproductive years 15–29, will be around 133 million (as against 103 million in 1966);
- Some 140 million girls, presently in the age group 0–15 years, will attain parenthood over the next 20 years.

3 Variations

The variations within the mosaic that is India are many. The size, density and growth rate of the population relate in a complex way to many factors of geography, rural-urban differences, language and culture reflected strongly in the political-administrative units represented by the 22 states and nine union territories. It is useful to consider demographic indicators like fertility and mortality, sex ratio and expectation of life at birth against the background of these multiple factors. More so when we are focusing on characteristics of a crucial segment like the child population.

The size of the Indian states varies widely in terms of population and area. The five states of the north-east (Sikkim, Nagaland, Meghalaya, Manipur and Tripura) are very small with population ranging from 300,000 to a little over two million. Four states in the north (Haryana, Himachal Pradesh, Jammu and Kashmir and Punjab) have a modest population size of four to 17 million. Taken together the nine union territories have a population of 9.8 million, with Delhi accounting for over six million.

The most populous state of Uttar Pradesh, 110.9 million, holds 16.2 per cent of the national population. Five other states have more than 50 million people each: Bihar, Maharashtra, West Bengal, Andhra Pradesh and Madhya Pradesh. Tamil Nadu follows closely with 48 million. These seven states account for nearly two-thirds of India's population.

TABLE 2
States and Union Territories by population size 1981

Rank	States/Union Territories in order of population size	Population (in '000)	Percentage to total popula- tion of India
	INDIA	685,185	100.00
1	Uttar Pradesh	110,862	16.18
2	Bihar	69,915	10.20
3	Maharashtra	62,784	9.16
4	West Bengal	54,581	7.97
5	Andhra Pradesh	53,550	7.82
6	Madhya Pradesh	52,179	7.62
7	Tamil Nadu	48,408	7.06
8	Karnataka	37,136	5.42
9	Rajasthan	34,262	5.00
10	Gujarat	34,086	4.97
11	Orissa	26,370	3.85
12	Kerala	25,454	3.71
13	Assam*	19,897	2.90
14	Punjab	16,789	2.45
15	Haryana	12,923	1.89
16	Delhi	6,220	0.91
17	Jammu and Kashmir	5,987	0.87
18	Himachal Pradesh	4,281	0.62
19	Tripura	2,053	0.30
20	Manipur	1,421	0.21
21	Meghalaya	1,336	0.19
22	Goa, Daman and Diu	1,087	0.16
23	Nagaland	775	0.11
24	Arunachal Pradesh	632	0.09
25	Pondicherry	604	0.09
26	Mizoram	494	0.07
27	Chandigarh	452	0.07
28	Sikkim	316	0.05
29	Andaman and Nicobar Islands	189	0.03
30	Dadra and Nagar Haveli	104	0.02
31	Lakshdweep	40	0.01

*Projected

Source: Census of India 1981.

4 Growth

Inter-state variations in population growth have widened during 1971-81 compared to the preceding decade. Kerala, Tamil Nadu and Orissa recorded a smaller increase in population, while the six large states of Uttar Pradesh, Bihar,

Andhra Pradesh, Karnataka, Rajasthan and Punjab registered a higher growth rate in the last decade as against the previous one. These six states accounted for 47 per cent of the country's population in 1981. The absolute increase in population size in Uttar Pradesh, Bihar and Rajasthan has been steep.

TABLE 3
Major states grouped according to percentage population growth during 1951–61, 1961–71 and 1971–81

Percentage Population Growth	1951–61	1961–71	1971–81
Below 20	Andhra Pradesh, Bihar, Himachal Pradesh, Jammu & Kashmir, Orissa, Tamil Nadu, Uttar Pradesh National Average, 21.51	Uttar Pradesh	Kerala, Tamil Nadu
20–22	Karnataka, Punjab	Andhra Pradesh, Bihar, Punjab	Orissa
22–25	Kerala, Madhya Pradesh, Maharashtra	Himachal Pradesh, Karnataka, Tamil Nadu <i>National Average: 24.80</i>	Andhra Pradesh, Bihar, Himachal Pradesh, Maharashtra Punjab, West Bengal <i>National Average: 25.00</i>
25–28	Gujarat, Rajasthan	Kerala, Maharashtra, Orissa, Rajasthan, West Bengal	Gujarat, Karnataka, Madhya Pradesh, Uttar Pradesh
28–31		Gujarat, Jammu and Kashmir	Haryana, Jammu and Kashmir
31 and above	West Bengal, Haryana, Assam	Haryana, Assam	Rajasthan, Assam

Source: Census of India 1981, Paper 1 of 1981 and Paper 1 of 1982.

The case of Uttar Pradesh illustrates the hurdle in the way of a demographic transition to a stable growth rate and population size. During the 1950s and 1960s its decennial growth was below 20 per cent. In fact it had the lowest growth rate among the states during the 1960s but it has recorded a high growth rate of 25.5 per cent during 1971–81.

There are more states (12) where the change

in the growth rate is positive than states (10) where it is negative. The net addition of population in the 12 states with increased growth rate is 54 per cent of the total additional population in 1981 (table 4).

Inter-state migration being relatively small in India, the difference in population growth rate as between states, sharply reflects the relation between the level of fertility and mortality.

TABLE 4
Absolute increase and per cent growth rate of population 1961–71 and 1971–81

State/Union Territory	Absolute Increase in Population ('000)		Per cent decadal growth rate		Per cent variation of growth rate of population 1971-81 over 1961-71
	1961-71	1971-81	1961-71	1971-81	
1	2	3	4	5	6
INDIA	108,925	137,025	24.80	25.00	+ 0.8
<i>States</i>					
Andhra Pradesh	7,519	10,047	20.90	23.10	+ 10.5
Assam	3,788	5,272*	34.95	36.05*	+ 3.2
Bihar	9,906	13,561	21.33	24.06	+ 12.8
Gujarat	6,064	7,388	29.39	27.67	– 5.8
Haryana	2,446	2,886	32.23	28.75	– 10.8
Himachal Pradesh	648	820	23.04	23.71	+ 2.9
Jammu & Kashmir	1,056	1,371	29.65	29.69	+ 0.1
Karnataka	5,712	7,837	24.22	26.75	+ 10.4

1	2	3	4	5	6
Kerala	4,444	4,106	26.29	19.24	- 26.8
Madhya Pradesh	9,282	10,525	28.67	25.27	- 11.9
Maharashtra	10,858	12,372	27.45	24.54	- 10.6
Manipur	293	348	37.53	32.46	- 13.5
Meghalaya	242	342	31.50	32.04	+ 1.7
Nagaland	147	358	39.88	50.05	+ 25.5
Orissa	4,396	4,426	25.05	20.17	- 19.5
Punjab	2,416	3,238	21.70	23.89	+ 10.1
Rajasthan	5,610	8,496	27.83	32.97	+ 18.5
Sikkim	48	107	29.38	50.77	+ 72.8
Tamil Nadu	7,512	7,209	22.30	17.50	- 21.5
Tripura	414	497	36.28	31.92	- 12.0
Uttar Pradesh	14,586	22,521	19.78	25.49	+ 28.9
West Bengal	9,386	10,269	26.87	23.17	- 13.8
<i>Union Territories</i>					
Andaman and Nicobar Is.	52	74	81.17	63.93	- 21.2
Arunachal Pradesh	131	164	38.91	35.15	- 9.7
Chandigarh	137	194	114.59	75.55	- 34.1
Dadra and Nagar Havell	16	29	27.96	39.78	+ 42.3
Delhi	1,407	2,155	52.93	53.00	+ 0.1
Goa, Daman & Diu	231	229	36.88	26.69	- 27.6
Lakshadweep	8	8	31.95	26.53	- 16.9
Mizoram	66	161	24.93	48.55	- 94.7
Pondicherry	103	133	27.81	28.15	+ 1.2

*Growth rate between 1971-81 of Assam is based on projected population of 1981.

Source: Census of India 1981, Paper 1 of 1982.

5 Child population

Children constitute about 40 per cent of the country's population, a proportion which has remained almost constant through the past 70 years. This age distribution of the population is the combined effect of high fertility and steady decline in mortality.

TABLE 5
Estimated child Population
(in '000)

Year	0-6 years	0-14 years
1971	104,854	230,512
1976	109,623	251,494
1981	115,150	264,184*
1986	120,358	270,264
1991	125,826	273,841

*Based on 5 per cent sample data of Census, 1981, the estimated child population in the age-group 0-14 is 271,971,000.

6 Density

The states of India vary vastly in size. So too the density of population between, and within them.

Madhya Pradesh, the biggest in area, extends over 400,000 sq. kms. Sikkim is just over 7,000 sq. kms. The union territories range between 21,000 sq. kms. for Mizoram and 32 sq. kms. for Lakshadweep.

The density of population for the country as a whole was 221 persons per sq. km. in 1981 against 177 in 1971. Among the states, Kerala and West Bengal have the highest densities of 654 and 614 respectively. They are followed by Bihar, Uttar Pradesh, Tamil Nadu and Punjab, each of which has a density of over 300.

Although India is less densely populated than Japan, Indonesia, Bangladesh and Sri Lanka, the concentration of population on arable land is higher than in China, USA, USSR and Brazil, given the fact that over 70 per cent of the labour force live by agriculture.

Despite the phenomenal growth of urban conglomeration, 76.3 per cent of India's population lives in the villages, according to the 1981 census. Growth trends in population may be such that this pattern may not be altered radically in the foreseeable future.

7 Urbanization

The urban population in India was estimated to

TABLE 6
States and Union Territories arranged in descending order of density of population

State/Union Territory	Density of Population per sq. km.	
	1981	1971
Delhi	4,178	2,742
Chandigarh	3,948	2,257
Lakshadweep	1,257	994
Pondicherry	1,228	959
Kerala	654	549
West Bengal	614	499
Bihar	402	324
Uttar Pradesh	377	300
Tamil Nadu	371	317
Punjab	331	269
Haryana	291	227
Goa, Daman and Diu	284	225
Assam	254	186
Dadra and Nagar Haveli	211	151
Maharashtra	204	164
Tripura	196	148
Andhra Pradesh	194	158
Karnataka	193	153
Gujarat	173	136
Orissa	169	141
Madhya Pradesh	118	94
Rajasthan	100	75
Himachal Pradesh	76	62
Manipur	64	48
Meghalaya	59	45
Nagaland	47	31
Sikkim	44	30
Andaman and Nicobar Islands	23	14
Mizoram	23	16
Arunachal Pradesh	7	6

Source: Census of India, Paper 1 of 1981.

be around 160 million representing 23.7 per cent of the total population in 1981. The decadal increase was about 50 million. During the decade 1971–81, while the overall population grew by 25 per cent, the urban population grew by 46 per cent. The number of urban agglomerations and towns has increased from 2,531 in 1971 to 3,245 in 1981, without counting Jammu and Kashmir and Assam.

About 60 per cent of the urban population lived in 216 cities with a population of 100,000 and more.

The 12 metropolitan cities with more than a million population accounted for about 27 per cent of urban population and recorded a growth of about 53 per cent. About 52 million or 33 per cent of the urban population lived in 204 cities in the population range of 100,000 to one million. Approximately 62 million lived in 2,020 small (population below 20,000), 739 medium (20,000–49,999) and 270 large towns (50,000–99,999).

8 Fertility and its control

High fertility, combined with rapid decline in

mortality and insignificant emigration, has resulted in a steady growth of population.

The rural birth rate declined from 38.9 in 1970 to 34.3 in 1977 and remained stable over the next four years to be 34.8 in 1981. The urban birth rate fluctuated from 29.7 in 1970 to 27.3 in 1981.

TABLE 7
Crude birth rate 1970–81
(per 1,000 population)

Year	Rural	Urban	Total
1970	38.9	29.7	36.8
1971	38.9	30.1	36.9
1972	38.4	30.5	36.6
1973	35.9	28.9	34.6
1974	35.9	28.4	34.5
1975	36.7	28.5	35.2
1976	35.8	28.4	34.4
1977	34.3	27.8	33.0
1978	34.7	27.8	33.3
1979	34.3	28.3	33.1
1980	34.6	28.1	33.3
1981	34.8	27.3	33.3

Source: Vital Statistics Division, Office of the Registrar General.

Through the Seventies the birth rate was the highest in the most populous state of Uttar Pradesh followed by Gujarat, Haryana, Madhya Pradesh and Rajasthan. At the other end of the scale was Kerala with the lowest birth rate in the country (table 8).

The factors associated with the low birth rate in Kerala are the high literacy rate in the state, especially that of females (65.73 per cent, 1981), the low infant mortality (40 per 1,000 live births, 1980), near-universal primary education, and a rather unique settlement pattern which renders access to health facilities and learning opportunities relatively easy and inexpensive.

Several demographic studies, official and independent, explain inter-state differences in fertility in terms of the level of education particularly of women.

reported the lowest. These latter group of states also reported low literacy rates especially of females.

In 1971, 11 per cent of the girls in India were married between the ages of 10 and 15 years although the legal limit was 15. Another 57 per cent were married between 15 and 19 years. The Sharda Act prohibiting child marriages (below 15 years) and the amended Child Marriage Restraint Act of 1978 (raising age at marriage of girls to 18 years) have not been effectively implemented because of the hold of custom, illiteracy, and fear about safety of unmarried girls, especially in rural areas.

Apart from relatively low mean age of marriage, marriage of girls and women is almost universal (at age 50, only five out of 1,000 Indian women remain never-married). The incidence of

TABLE 8
Crude birth rates for major states

State	1971-73			1978-80		
	Rural	Urban	Combined	Rural	Urban	Combined
Andhra Pradesh	34.3	33.1	34.1	33.1	28.3	32.2
Assam	36.8	28.7	36.0	33.0	23.2	32.2
Bihar	32.7	27.5	32.3	36.5	30.2	35.8
Gujarat	40.1	34.2	38.6	36.9	31.5	35.5
Haryana	42.5	32.0	40.6	37.0	29.3	35.8
Himachal Pradesh	36.8	23.5	36.0	30.6	21.2	30.2
Jammu and Kashmir	34.9	22.6	32.2	33.5	22.3	31.4
Karnataka	32.3	26.4	30.7	29.4	25.6	28.3
Kerala	30.7	29.2	30.5	26.2	24.8	25.9
Madhya Pradesh	39.6	33.4	38.6	38.5	31.3	37.4
Maharashtra	32.0	29.1	31.1	28.9	25.3	27.8
Orissa	34.8	32.5	34.7	32.1	29.5	31.8
Punjab	35.1	30.4	34.1	29.8	27.7	29.3
Rajasthan	42.4	34.3	40.9	37.5	32.2	36.5
Tamil Nadu	33.4	26.2	31.3	29.6	26.0	28.5
Uttar Pradesh	44.6	34.0	43.2	40.9	32.4	39.8
West Bengal	—	25.4	—	34.0	20.5	30.9

Source: Sample Registration System, Vital Statistics Division of the Office of the Registrar General.

A crucial factor contributing to high fertility in India is the young age at which girls are married. In the absence of a foolproof system for marriage registration, data on mean age at marriage are derived from the age-specific proportion of 'never-married' women reported by the census. Such analysis reveals a small rise in age at marriage of girls from 13 years in 1901 to 15.3 years in 1951, 17 years in 1971 and 18.6 years in 1981. In 1971, age at marriage for urban areas was higher by two and a half years than in rural areas for both boys and girls. There were considerable regional variations, with Kerala reporting the highest mean age at marriage (20.9 years for females and 26.3 years for males) while Madhya Pradesh, Rajasthan, Uttar Pradesh and Bihar

widowhood is declining due to improved expectation of life at birth. (Widow remarriage is prohibited by custom especially among The "higher" castes.)

Comparative data for 14 states on mean age at marriage for males and females for 1971-81 indicate very little change over the decade. At the all-India level, mean age at marriage for females in 1971 was 17.75 years. This increased only marginally to 18.66 years in 1981. For the 14 states for which data are available on the decadal difference no state has registered an increase in mean age beyond two years. Among states, Kerala had the highest average age at marriage of 21.87 in 1981 (which is a slight increase over 21.4 years in 1971) while Rajasthan had the

lowest mean age of 17.02 years with Bihar closely following with 17.08, Madhya Pradesh with 17.19 and Andhra Pradesh 17.59. Next to Kerala, Punjab had in 1981, the highest mean age at female marriage of 21.12 years, followed by Tamil Nadu with 20.25 years. What is perhaps more significant is the decrease in percentage of married females to the total in the 15–19 year age group—from 55.41 per cent in 1971 to 43.47 per cent in 1981. However, the number of couples per 1,000 population on an all-India basis remained constant—170 in 1971 and 169 in 1981.

Incidence of sterility as measured by percentage of ever-married women (age 50 and above) with no live births in 1981 stood at 6.49 for all India and varied between the lowest 1.32 per cent in Karnataka to the highest 11.97 per cent in Orissa. (Key Population Statistics on five per cent sample data 1983.)

According to data from the Department of Family Welfare, Government of India, between 1976 and 1978 in rural areas there has been a sharp decline in all the three fertility indicators—general fertility rate, gross reproduction rate and total fertility rate. Decline on these indicators was far less significant between 1972 and 1976. For urban areas the decline on the three indicators was sharp during 1972–74, but reached a plateau during 1974–76 and again registered a sharp trend between 1976 and 1978. Trends in age-specific fertility rates for rural areas between 1972 and 1978 were similar but slightly lower, with fertility peaking between 20 and 29 years and falling thereafter steadily from 29 to 34 years onwards. (Family Welfare Programme in India—Year Book, 1981–82.)

Urban age-specific fertility rates, while following the same general trend with the peak age of 20 to 29 years, show a far sharper decline from age 29 onwards during 1978, as compared to 1972. Obviously, urban fertility has declined faster than the rural. In the 1970s, there was a definite decline in fertility of Indian women of all ages; but the decline was largest in the youngest and oldest age groups of the reproductive range. In the 15–19 years age group fertility declined by 30 per cent between 1972–78 largely due to an increase in the age at marriage. Among women aged 30 years and above the decline was 15 to 20 per cent for the same period—due to the practice of contraception. Overall, fertility declined by nine to 15 per cent between 1972 and 1978 depending upon alternative assumptions regarding the practice of breastfeeding (nine per cent decline on the assumption of a moderate decline in breastfeeding, and 15 per cent on the assumption of no change in the incidence of breastfeeding).

As a result of three decades of the National Family Planning (now called Family Welfare) Programme, 23 per cent of eligible couples have been effectively protected by contraception. The targets set by the Ministry of Health and Family Welfare are: 35 per cent eligible couples by 1985, 44 per cent by 1990 and 60 per cent by the year 2000. The average family size of 4.3 (1979) is to be reduced to 2.3 by 2000.

To achieve fertility decline not in the limited demographic perspective but in the context of improved maternal and child survival and health, several concomitant socio-economic and health measures are required. The inverse relationship between fertility on the one hand and female literacy and higher age at marriage on the other has been overwhelmingly demonstrated. Increased use of effective contraception by 20–29 year old women (who have registered the lowest fertility decline in the Seventies even as they contribute to 50 per cent of all births); supply of contraceptives from non-government and non-family planning programme sources and more emphasis on birth spacing methods would be effective and badly needed measures.

Concomitant efforts are needed to reduce infant and child mortality levels in order to motivate couples to accept permanent contraceptive methods. A major contribution to family planning would be the promotion of child survival and the mother's knowledge that the health of both mother and child would be better for fewer births and longer intervals in between. The mutual impact of spacing of births and infant mortality is demonstrated for countries for which related data are available.

A WHO survey of 6,000 women in South India indicated the following:

Space between births	Infant mortality rate
Less than one year	200
1–2 years	145
2–3 years	100
3–4 years	80

The national family welfare programme aims at reducing the net reproduction rate to one by 1995. This implies that the birth rate would be reduced from the current 33 to 21 and the death rate from 14 to nine by 1995. Over successive five year plans the programme has expanded considerably in its multifaceted approach—education and public awareness and supplies and services through urban Family Welfare Centres (2505 upto March 1982 including 528 attached to post-partum family welfare institutions), city family welfare bureaus (13) to co-ordinate the work of urban centres, and 5,428 rural family welfare centres and 57,638 sub-centres. The programme seeks to develop inter-

sectoral linkages to promote better female literacy, ensuring observance of the law relating to minimum age at marriage and involvement of people's representatives.

The programme is increasingly integrated with maternal and child health (MCH) services, and ante-natal care, immunization of mothers against tetanus (TT), prophylaxis against nutritional anaemia and blindness due to Vitamin A deficiency in children and immunization of infants and children against diphtheria, pertusis, tetanus (DPT), poliomyelitis, measles, typhoid and tuberculosis.

In the Sixth Plan (1980–85) the Family Welfare programme has a total provision of Rs. 10,100 million. The mid-term appraisal of the plan revealed a 36.7 per cent achievement of planned targets for sterilization and 30 per cent for intra-uterine devices (IUD) resulting in effective eligible couple protection of 25.9 per cent against the target of 36.6 per cent by end 1984–85. The performance of states is uneven highlighting a need to intensify efforts in the most populous states of Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh.

Among the lessons of the Indian experience in trying to limit family size are the following:

- the programme is best based on voluntary effort resulting from heightened awareness;
- birth spacing is the first step towards small family and provides time, opportunity and incentive for self-decision;
- improvement in child survival and growth, is not only an aim in itself but also a practical persuasion that the health of both child and mother will be better if there were fewer births and longer intervals in between.
- attempts to lower the birth rate cannot be delinked from the basic minimum needs of the people who account for the high rate, their needs in elementary education, primary health care, essential nutrition, basic sanitation and shelter, and to sustain all these, avenues of employment and income.

9 Mortality

The death rate declined more or less steadily from 1970 to 1981 (Table 9). Influenced as it is by mortality in infancy and early childhood, the rate would have fallen further, with improved chances of child survival. And, despite the declining trend, the rural rate remains considerably higher than the urban.

TABLE 9
Crude death rate (per 1,000)

Year	Rural	Urban	Total
1970	17.3	10.2	15.7
1971	16.4	9.7	14.9
1972	18.9	10.3	16.9
1973	17.0	9.6	15.5
1974	15.9	9.2	14.5
1975	17.3	10.2	15.9
1976	16.3	9.5	15.0
1977	16.0	9.4	14.7
1978	15.3	9.4	14.2
1979	13.9	8.4	12.8
1980	13.5	8.0	12.4
1981	13.7	7.9	12.5

Source: Sample Registration Bulletin, Vital Statistics Division, Office of the Registrar General.

The death rate varies widely between the states, from 16.4 per 1,000 in Uttar Pradesh to 6.9 in Kerala over 1979–81. These states marked the extremes in respect of rural areas as well; seven per 1,000 in rural Kerala and 17.3 in rural Uttar Pradesh (Table 10).

The states with high mortality like Gujarat, Rajasthan, Orissa, Bihar and Uttar Pradesh are also the states with high fertility. For example, Uttar Pradesh has the highest birth and death rates; and it also has a high sex differential in mortality, the female deaths being more than male deaths especially in the rural areas.

The main reason for the impressive decline in mortality between the Twenties and Seventies has been the control of epidemics and communicable diseases. Incidentally this was achieved in half the time it took the industrialized countries in the previous century.

10 Infant mortality

Almost half (47 per cent) the total number of deaths occur in the age group 0–4 years. About a third of *all* deaths occur in the first *year* of life. Nearly a fifth of all deaths occur in the first *month* and about a tenth of all deaths occur in the first week.

Seen another way, two fifths of infant deaths occur in the first month. And nearly half the deaths in the first month occur in the first week itself.

The proportion of infant deaths to total deaths varies from state to state, from 35.1 per cent in Uttar Pradesh to 16.9 per cent in Kerala.

Infant mortality declined from 200 live births in 1901 to 129 in 1970. Touching a plateau for some years, it dipped to 120 in 1979 and an estimated

TABLE 10
Average crude death rate for major states in India 1971-73 and 1979-81

States	1971-73			1979-81		
	Rural	Urban	Total	Rural	Urban	Total
Andhra Pradesh	17.0	10.3	15.8	12.7	7.1	11.6
Assam	18.1	9.7	17.3	11.7	7.1	11.4
Bihar	—	—	—	15.7	7.8	14.7
Gujarat	17.0	11.9	15.7	13.0	10.5	12.4
Haryana	11.9	8.3	11.3	11.6	7.8	11.0
Himachal Pradesh	15.9	6.9	14.6	11.0	5.6	10.8
Jammu and Kashmir	11.6	6.6	10.5	10.2	5.6	9.3
Karnataka	14.2	7.9	12.4	11.0	6.4	9.8
Kerala	9.1	7.8	8.9	7.0	6.3	6.9
Madhya Pradesh	18.1	10.9	17.1	16.9	9.1	15.6
Maharashtra	14.5	9.3	12.9	11.2	7.5	10.0
Orissa	18.5	11.0	17.9	14.5	8.6	14.0
Punjab	12.4	9.1	11.7	9.7	7.3	9.2
Rajasthan	17.0	9.6	16.2	14.4	8.3	13.3
Tamil Nadu	16.9	8.8	14.5	13.1	8.3	11.7
Uttar Pradesh	22.9	13.5	21.7	17.3	10.1	16.4
West Bengal	—	—	—	12.7	6.6	11.3
India	17.4	9.9	15.9	13.7	8.1	12.6

Source: Sample Registration Bulletins of Vital Statistics Division, Office of the Registrar General.

TABLE 11
Per cent infant deaths to total deaths in major states of India (1976-78)

States	Rural	Urban	Total
Andhra Pradesh	29.4	24.5	28.7
Assam	27.2	26.7	27.2
Gujarat	35.9	28.7	34.4
Haryana	30.3	19.5	29.0
Himachal Pradesh	27.7	19.7	27.4
Jammu and Kashmir	20.1	10.9	18.9
Karnataka	20.9	19.4	20.7
Kerala	17.8	13.4	16.9
Madhya Pradesh	33.7	28.4	33.3
Maharashtra	22.6	18.7	21.8
Orissa	28.7	23.4	28.6
Punjab	31.5	23.4	30.4
Rajasthan	33.1	23.8	32.1
Tamil Nadu	23.7	20.8	23.0
Uttar Pradesh	37.4	30.0	35.1
India	30.5	23.6	29.7

Source: Vital Statistics Division, Office of the Registrar General.

TABLE 12
Infant mortality rate in India: 1911-80

Period	IMR
1911-1915	204 (5 years average)
1916-1920	219 „
1921-1925	174 „
1926-1930	178 „
1931-1935	174 „
1936-1940	161 „
1941-1945	161 „
1946-1950	134 „
1951-1961	146 (Actuarial report)
1961-1971	129 „
1970	129 SRS
1971	129 „
1972	139 „
1973	134 „
1974	126 „
1975	140 „
1976	129 „
1977	130 „
1978	126 Survey
1979	120 SRS
1980	114 „

Source: Survey on Infant and Child Mortality 1979, Office of the Registrar General.

114 in 1980. In contrast, general mortality declined much faster. General mortality has declined due to public health measures and control of communicable diseases. However, infant mortality is linked to a larger cluster of factors: ante-natal care of expect-

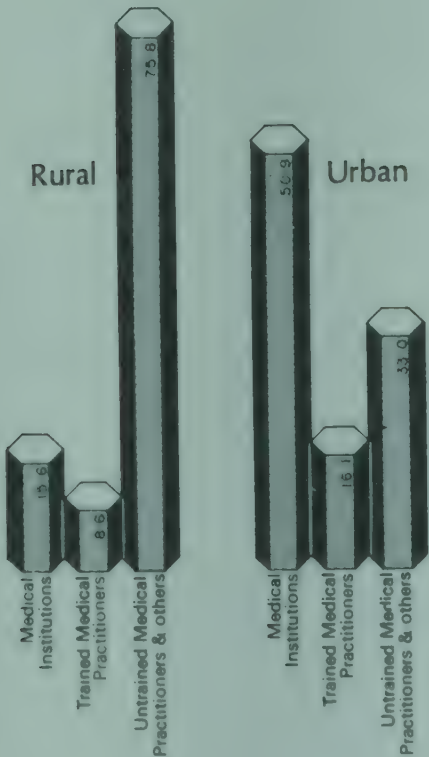
tant mothers (e.g. periodic check-up during pregnancy, detection and treatment of iron or iodine deficiency and common complications of pregnancy, immunity against tetanus); institutional care during delivery; infant care after birth; and socio-economic support for the family.

The predominance of domiciliary child-birth in rural areas is a critical factor in post-partum complications leading to maternal and peri-natal mortality. Some 75 per cent births in rural areas are attended by untrained medical practitioners and traditional midwives, as compared to 33 per cent in urban areas (according to the 1979 Survey of the Registrar General).

Several other maternal factors influence the infant mortality rate (IMR); e.g.,

- The nutritional status of pregnant women, e.g. anaemia is estimated to be prevalent among 60 per cent of Indian women and upto 50 per cent among those in the latter part of pregnancy;
- Birth orders five and above, which are common, are risky to mother as well as to child;
- Spacing less than two to three years between births entails higher risk to mothers and children;
- Maternal age below 20 and above 34 years involve relatively greater risk to mother.

PERCENT BIRTHS BY TYPE OF ATTENTION
AT BIRTH, 1978 - INDIA



11 Differentials in infant mortality

Rural-urban differences in IMR have persisted through the years. For instance, the years 1972 and 1975 registered unusually high rural rates, 150 and 151, while corresponding figures for urban areas were 85 and 84 respectively. Table 13 compares the years from 1970 to 1980.

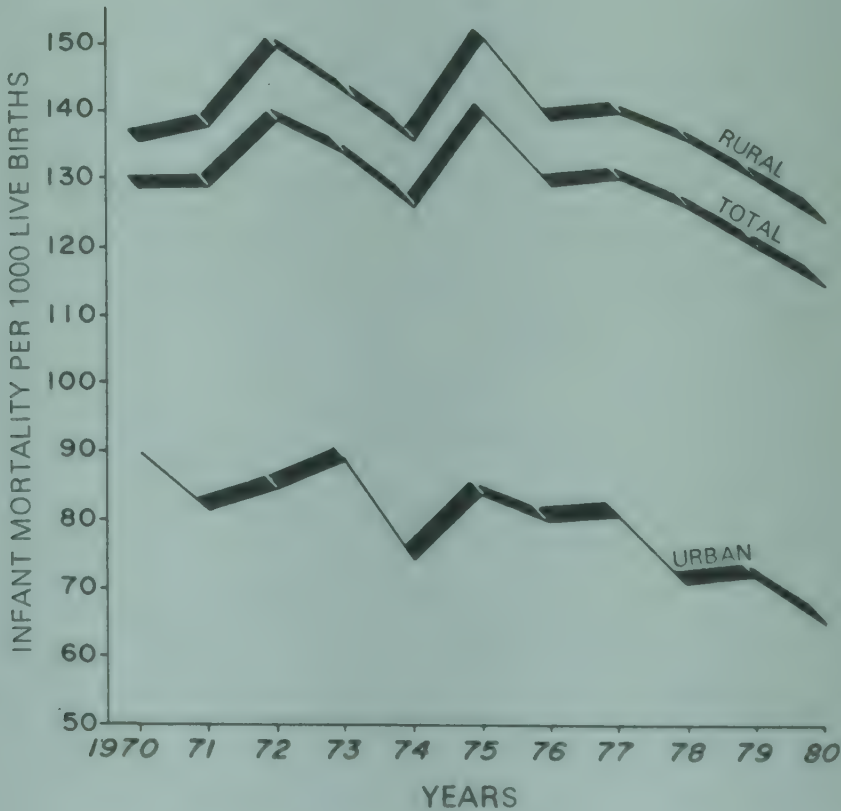
TABLE 13
Infant mortality rates (1970–1980) India
(per 1,000 live births)

Year	Rural	Urban	Total
1970	136	90	129
1971	138	82	129
1972	150	85	139
1973	143	89	134
1974	136	74	126
1975	151	84	140
1976	139	80	129
1977	140	81	130
1978	136	71	126
1979	130	72	120
1980	124	65	114

Source: Vital Statistics Division, Office of the Registrar General.

Inter-state variations also have been wide, again in all the years. For the year 1980, Uttar Pradesh (159), Orissa (143) and Madhya Pradesh (142) ranked as the three highest IMR states, while Kerala, Karnataka and Jammu and

INFANT MORTALITY RATES



Kashmir ranked as the lowest three (table 14). The critical infant mortality belt—calling for area-based, cause-specific and time-bound interventions to improve infant and child survival—consists of the states having an IMR of over 100, namely Uttar Pradesh, Madhya Pradesh, Bihar, Gujarat, Rajasthan, Assam, Orissa and Haryana.

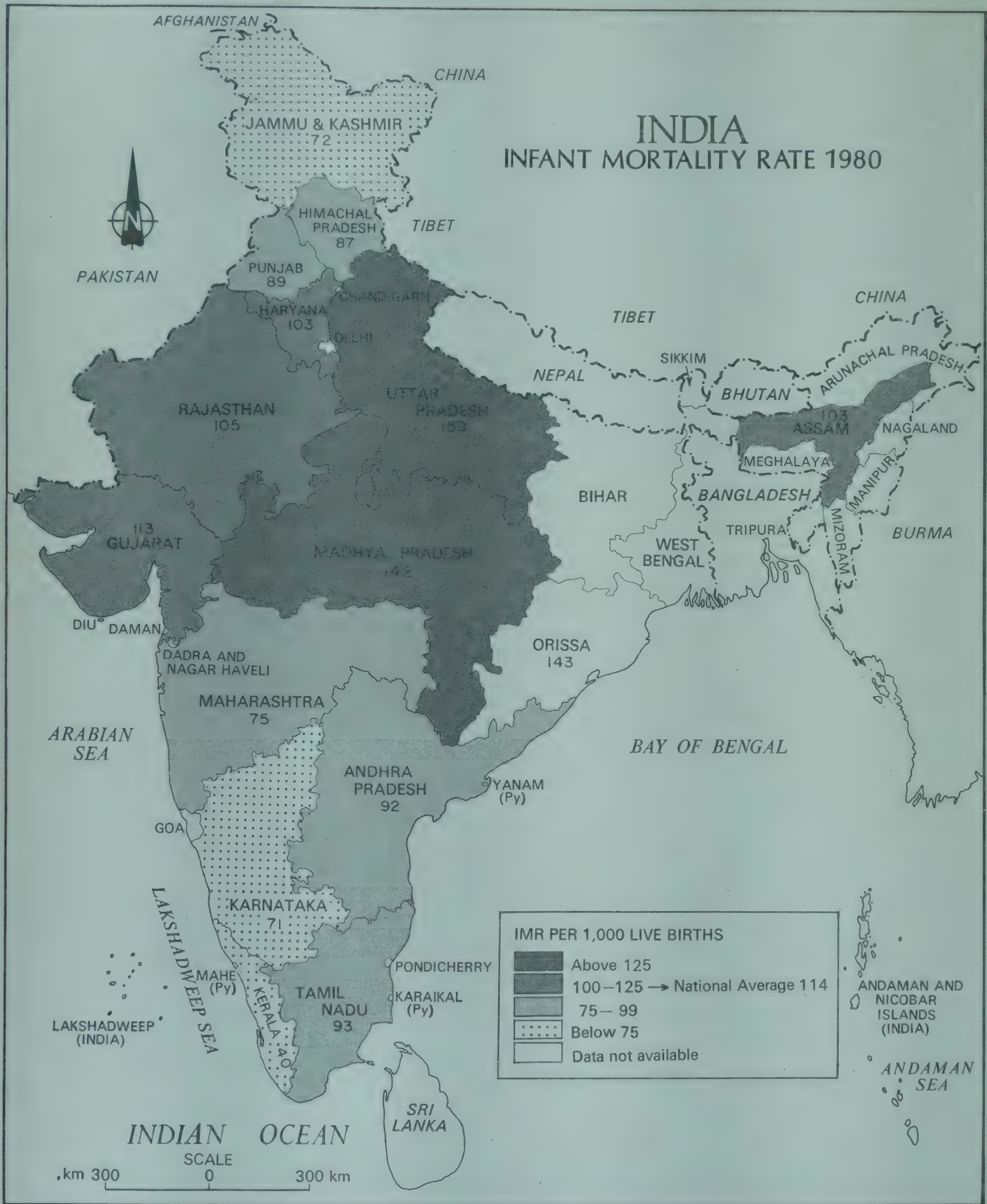


TABLE 14
 Infant mortality rates for major states in India
 (1972, 1978 and 1980)

State	Rural			Urban			Total		
	1972	1978	1980	1972	1978	1980	1972	1978	1980
Andhra Pradesh	128	120	103	65	62	40	116	112	92
Assam	140	120	105	95	86	66	136	118	103
Gujarat	139	127	119	94	88	94	128	118	113
Haryana	98	116	111	72	59	53	94	109	103
Himachal Pradesh	120	99	88	38	52	62	116	97	87
Jammu & Kashmir	76	76	76	43	28	45	71	70	72
Karnataka	102	81	79	68	55	45	95	75	71
Kerala	66	42	41	43	26	34	63	39	40
Madhya Pradesh	165	141	152	102	86	80	156	135	142
Maharashtra	114	84	84	70	56	52	101	75	75
North-Eastern Region	115	85	—	83	48	—	114	84	—
Orissa	136	137	150	73	80	62	131	133	143
Punjab	129	111	96	78	65	58	119	103	89
Rajasthan	132	139	115	76	65	50	123	129	105
Tamil Nadu	133	120	103	85	63	64	121	103	93
Uttar Pradesh	213	172	167	120	110	99	202	167	159
India	150	136	124	85	71	65	139	126	114

Source: Vital Statistics Division, Office of the Registrar General.

12 Dimensions of infant mortality

The hard crust of infant mortality in India may be seen in three dimensions: peri-natal (0–7 days), neo-natal (0–29 days) and post neo-natal (1–12 months).

For rural areas neo-natal mortality was 72 in 1970. It increased to 85 in 1978. While post neo-natal mortality decreased from 64 to 52 as percentage of infant deaths, neo-natal deaths increased from 53 to 62 in rural areas over 1970–78.

NEO-NATAL AND POST-NATAL INCLUDING
 PERI-NATAL MORTALITY RATES IN INDIA
 (1970-78)

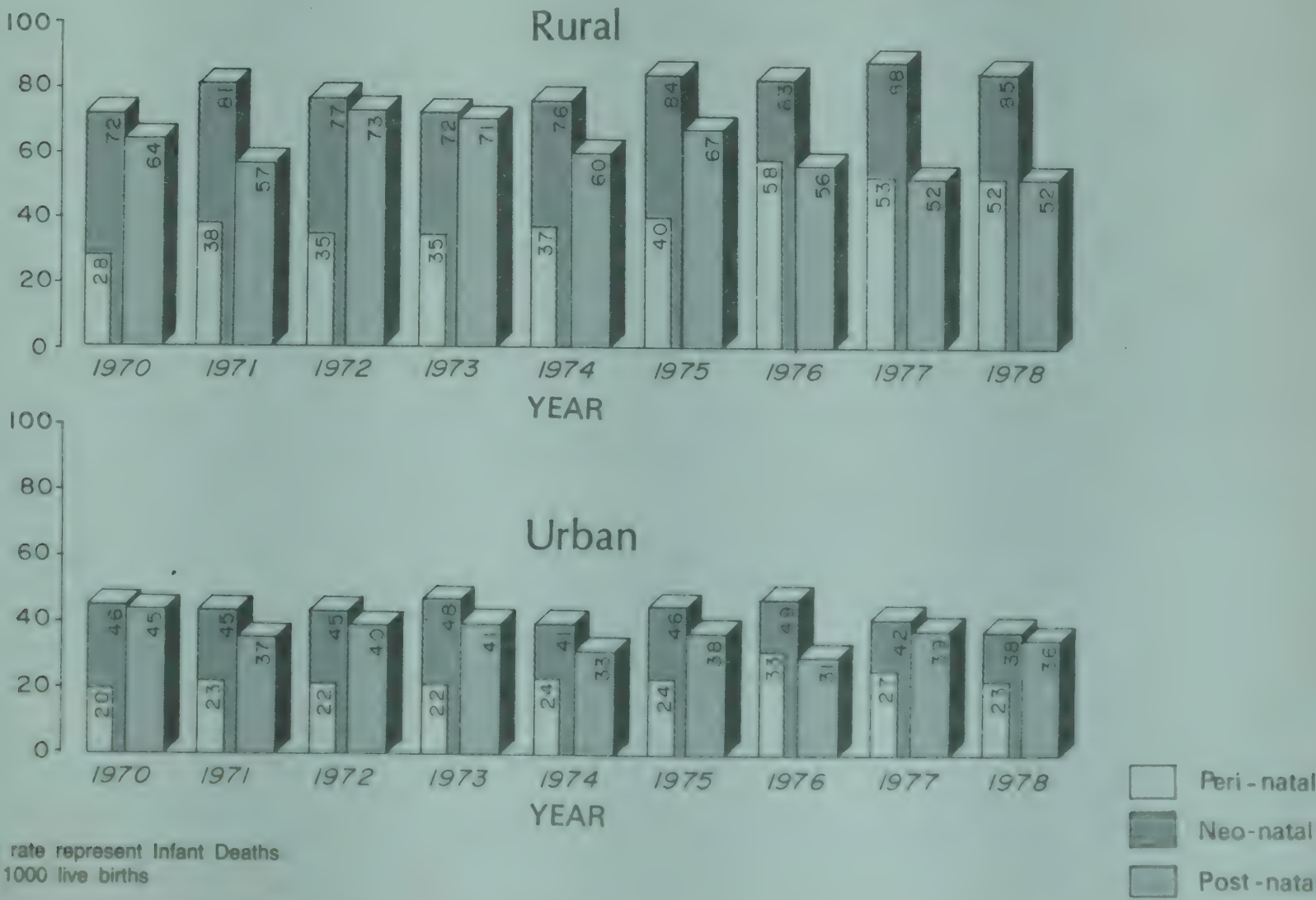


TABLE 15
Neo-natal and post-natal mortality rates—India (1970–1978)

	Rural			Urban		
	Neo-natal mortality	Post-natal mortality	% of neo-natal to infant deaths	Neo-natal mortality	Post-natal mortality	% of neo-natal to infant deaths
1970	72	64	53	46	45	51
1971	81	57	58	45	37	55
1972	77	73	51	45	40	53
1973	72	71	50	48	41	53
1974	76	60	56	41	33	55
1975	84	67	56	46	38	55
1976	83	56	60	49	31	61
1977	88	52	63	42	39	52
1978	85	52	62	38	36	51

Source: Vital Statistics Division, Office of the Registrar General.

Urban neo-natal mortality as a percentage of the total infant deaths has remained more or less steady around 51 (except for 1976 when it rose to 61). For the years 1976–78 urban neo-natal mortality rates (43) were almost half that for rural areas (85). The corresponding post neo-natal mortality rates were 35 urban and 53 rural.

Peri-natal mortality rate was around 48 per 1,000 live births during 1976–1978. There is a

clear rural-urban difference, the rural rate being more than twice the urban, for the years 1977 and 1978. The rural peri-natal mortality rate was 53 and 52 compared to the urban rates of 27 and 23 respectively. Under-reporting of fatal cases is a possibility to be kept in view in considering the fluctuations in the rate. It is hard to estimate precisely the peri-natal deaths in India because most births, especially in rural areas, are domicili-

TABLE 16
Infant mortality and mortality in neo-natal and post-neonatal periods in ten areas of eight studies in India.

Location	Live births	Infant (—1 year)		Neo-natal (0–27 days)		Post-neonatal (28 days–11 mths)		Year
		No.	Rate	No.	Rate	No.	Rate	
Rural community, Palghar	8,109	677	83.5	353	43.5	324	40.0	1960–65
Ballabgarh Urban	1,529	141	92.2	78	51.0	63	41.2	1975
Pondicherry Urban birth cohort,	807	65	80.5	28	34.7	37	45.8	1968–72
South Delhi	5,592	254*	45.4	—	21.2	—	24.2	1969–72
Narangwal, Punjab	2,984	310	103.9	178	59.7	132	44.2	1970–72
North Arcot Dist. Tamil Nadu								
Rural	4,757	543	114.2	288	60.5	255	53.6	1970–72
Urban	3,485	381	109.3	152	43.6	229	65.7	1970–72
Ludhiana, Punjab								
3 Rural centres	1,961	194	98.9	101	51.5	93	47.4	1978–80
Urban Centre	925	51	55.1	24	25.9	27	29.1	1978–80
Rajasthan villages	500*	62	124.0	31	62.0	31	62.0	1977

Per 1000 live births
* Estimates were made from available deaths or rates.

Source: Arole and Rohde, “Organization of Health Services and Training of Physicians for Child Health Services”. A Consultants Report to USAID, August 1983.

TABLE 17
Peri-natal mortality rates in India
 (Infant deaths within 7 days per 1,000 live births)

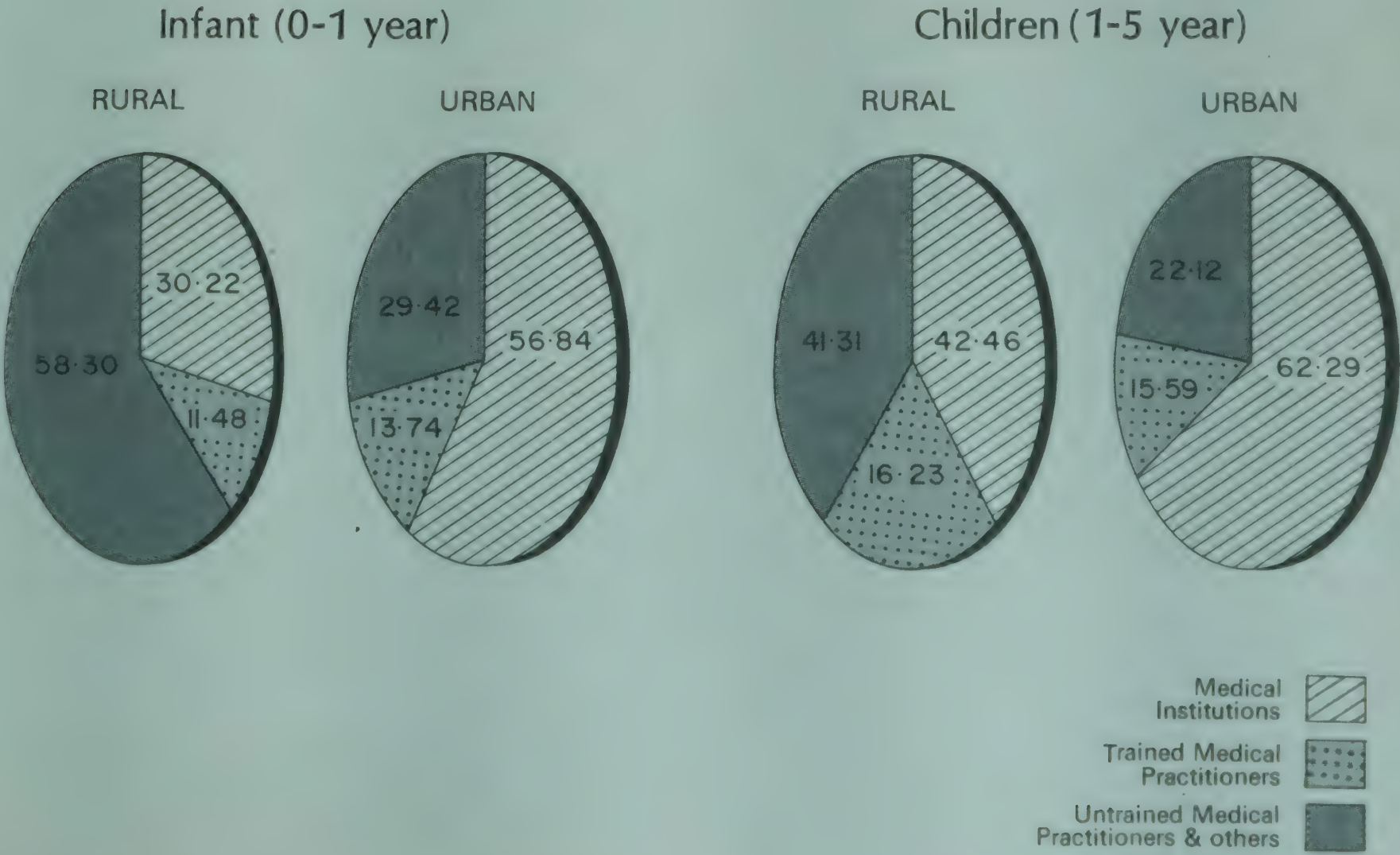
Year	Rural	Urban	Total
1970	28	20	28
1971	38	23	36
1972	35	22	33
1973	35	22	33
1974	37	24	35
1975	40	24	38
1976	58	33	49
1977	53	27	48
1978	52	23	47

(Note: Approximate rate has been taken as the difference between peri-natal and still birth rates)
 Source: Vital Statistics Division Office of the Registrar General

ary and often conducted by untrained attendants or family members.

The peri-natal mortality rate varied considerably among the states with rural Kerala having less than 20 while Andhra Pradesh had over 60. In urban areas, Kerala, Jammu and Kashmir, Himachal Pradesh and Haryana had the lowest rates (less than 20) while Gujarat, Andhra Pradesh, Uttar Pradesh and Assam had the highest (30–40).

PERCENT DISTRIBUTION OF INFANT AND CHILD DEATHS
 BY TYPE OF ATTENTION AT DEATH 1978



13 Child mortality

From 1970 to 1978, mortality rate for the age group 0–4 years changed little. The death rate for 0–4 years ranged from 53 in 1970 to 50.1 in 1978. However, the rural death rates for male and female children showed a significant difference in 1970, 55.5 for males and 61 for females. These narrowed down by 1973, to 54.0 and 54.3 respectively. However, the urban rates were nearly the same for male and female, around 32.3 in 1970 and 30.3 to 31.1 in 1978. There was a significant rural-urban difference for this age group during these eight years. All through, the urban 0–4 years death rate was a little more than half of rural—58.1 in rural and 32.3 in urban areas for the year 1970. In 1978 the figures were 54.1 rural and 30.7 urban.

The data for 1976 show considerable inter-state variations in percentage of deaths of children below five years. Uttar Pradesh (56.26 per cent), Gujarat (54.66 per cent) and Rajasthan (53.02 per cent) showed the highest percentages of infant deaths to total deaths, while Kerala showed the lowest rate of 29.07 per cent. The percentage of female child deaths was higher than the male percentage in almost all the states except Andhra Pradesh and Tamil Nadu where the two rates were nearly equal.

TABLE 18
Classification of major states in India according to peri-natal mortality (infant deaths within seven days per 1,000 live births) (1976–1978)

(Infant deaths within 7 days per 1,000 live births)	Rural areas	Urban areas
Less than 20	Kerala (19)	Kerala (11) Jammu and Kashmir (15) Himachal Pradesh (18) Haryana (18)
20–30	Jammu and Kashmir (24) Himachal Pradesh (28)	Maharashtra (22) Orissa (22) Punjab (23) Karnataka (26) Tamil Nadu (26) Rajasthan (29) Madhya Pradesh (29)
30–40	Haryana (36) Punjab (37) Karnataka (39)	Gujarat (35); Andhra Pradesh (36) Uttar Pradesh (36) Assam (39)
40–50	Assam (41) Orissa (44) Maharashtra (44) Madhya Pradesh (48) Tamil Nadu (48)	
50–60	Rajasthan (53) Gujarat (58) Uttar Pradesh (59)	
More than 60	Andhra Pradesh (65)	

Note: Figures in brackets indicate the rate

Rural-urban differentials were also significant: rural child mortality being 48.9 per cent of all deaths as compared to 38.29 per cent for the urban areas. Such differences were less sharp in Kerala and Assam.

tive age 15–29 years were reported to be consistently higher than male death rates in both rural and urban areas. The causal factors for this difference lie in the hazards of pregnancy and child birth. For the years 1979 and 1980, female

TABLE 19
Age-specific death rate 0–4 years

	Male	Rural Female	Person	Male	Urban Female	Person	Male	Total Female	Person
1970	55.5	61.0	51.8	32.3	32.3	32.3	51.7	55.1	53.0
1971	53.2	59.3	56.2	31.1	33.3	32.2	49.2	54.8	51.9
1973	53.1	60.8	56.8	29.6	33.4	31.4	48.9	56.0	52.3
1976	54.2	55.9	55.2	29.0	30.1	29.7	49.6	51.9	51.1
1978	54.0	54.3	54.1	30.0	31.1	30.7	50.0	50.2	50.1

Source: Survey on infant and child mortality, 1979, Office of the Registrar General.

14 Female mortality

Mortality trends are uneven as between adults and infants, males and females, villages and towns. Female death rates in the peak reproduc-

deaths were relatively more in the age groups 1–4, 5–14, 15–24 and 25–34 years as compared to males in both the years.

TABLE 20

Age-sex distribution of reported deaths—number and per cent—all India, 1979–80

Age-Group	1979			1980		
	Persons	Males	Females	Persons	Males	Females
Below 1 Year	3,296 (19.6)	1,767 (19.6)	1,529 (19.4)	3,296 (18.7)	1,818 (18.8)	1,478 (18.5)
1–4	1,675 (9.9)	720 (8.0)	955 (12.2)	1,624 (9.2)	753 (7.8)	871 (10.9)
5–14	910 (5.4)	456 (5.1)	454 (5.8)	963 (5.4)	474 (4.9)	489 (6.1)
15–24	1,570 (9.3)	727 (8.1)	843 (10.7)	800 (4.5)	349 (3.6)	451 (5.6)
25–34				947 (5.4)	463 (4.8)	484 (6.1)
35–44	2,192 (13.0)	1,392 (14.8)	863 (11.0)	1,008 (5.7)	570 (5.9)	438 (5.5)
45–54				1,235 (7.0)	762 (7.8)	473 (5.9)
55 and over	7,205 (42.8)	3,992 (44.4)	3,213 (40.9)	7,799 (44.1)	4,488 (46.4)	3,311 (41.4)
Total	16,848 (100.0)	8,991 (100.0)	4,857 (100.0)	17,672 (100.0)	9,677 (100.0)	7,995 (100.0)
Per cent by sex	100.0	53.4	46.6	100.0	54.8	45.2

Source: Survey of causes of death (Rural) 1980, Office of the Registrar General.

15 Life expectancy

The average expectation of life at birth for males and females showed a steady increase through the first eight decades of the century, the figures reflecting a slightly slower progress for females. Many factors affect life expectancy; for instance, the lower figure for the second decade is probably explained by higher mortality due to an epidemic of influenza at that time.

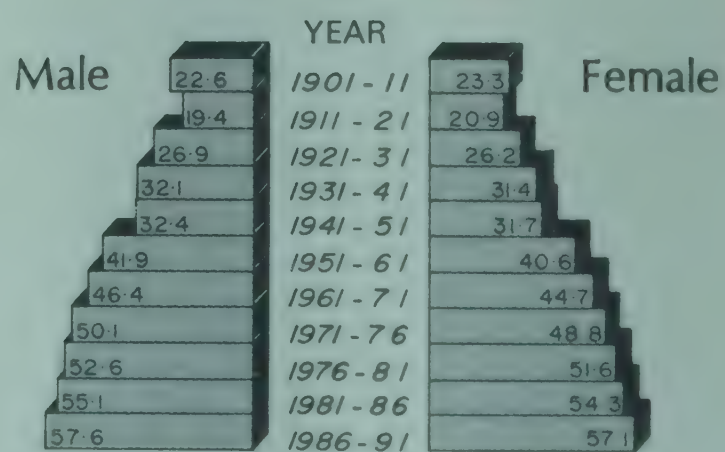
TABLE 21

Average expectation of life at birth (in years)

Year	Male	Female
1901/11	22.6	23.3
1911/21	19.4	20.9
1921/31	26.9	26.6
1931/41	32.1	31.4
1941/51	32.4	31.7
1951/61	41.9	40.6
1961/71	46.4	44.7
1971/76	50.1	48.8
1976/81	52.6	51.6
1981/86	55.1	54.3
1986/91	57.6	57.1

Source: Health For All: An Alternative Strategy, (ICSSR—ICMR)); and Economic Situation and Prospects of India, World Bank, 1982.

AVERAGE EXPECTATION OF LIFE AT BIRTH



16 More men than women

Overall, India has had an excess of males over females from the start of the century. The sex ratio declined from 972 females per 1,000 males in 1901 to 935 in 1981. As a result in 1981 there were 22.9 million more males than females.

Considerable inter-state variations exist in the sex ratio (table 22). With the exception of Kerala where females outnumber males, in most of the northern and north-eastern states (Haryana, Punjab, Uttar Pradesh, Assam, Nagaland, Sikkim and West Bengal) males are in excess by almost 10 percentage points. Tamil Nadu and Orissa have two per cent deficit of females; Andhra Pradesh and Karnataka four per cent.

The major causes of the adverse sex ratio are reckoned to be:

- Higher risk of female deaths from infancy

to the end of reproductive age, partly due to discrimination against females in health care and nutrition; and

- A traditionally inculcated attitude of self-effacement among females.

An analysis of mortality in India shows that female death rates in the peak reproductive age group 15–29 years are consistently higher than male death rates in both rural and urban areas, primarily due to hazards of pregnancy and child birth. It is only after the age of 35 that the male death rate exceeds the female death rate.

TABLE 22
Sex ratio 1901–1981

State/ Union territories	1901	1921	1941	1951	1961	1971	1981
INDIA	972	955	945	946	941	930	935
States							
Andhra Pradesh	985	993	980	986	981	977	975
Assam	919	896	875	868	869	896	900
Bihar	1,054	1,016	996	990	994	954	947
Gujarat	954	944	941	952	940	934	942
Haryana	867	844	869	871	868	867	877
Himachal Pradesh	884	890	890	912	838	858	988
Jammu and Kashmir	882	870	869	873	878	878	953
Karnataka	983	969	960	966	959	957	963
Kerala	1,004	1,011	1,027	1,028	1,022	1,016	1,034
Madhya Pradesh	990	974	970	967	953	941	941
Maharashtra	978	950	949	941	936	930	939
Manipur	1,037	1,041	1,055	1,036	1,015	980	972
Meghalaya	1,036	1,000	966	949	937	942	956
Nagaland	973	992	1,021	999	933	871	867
Orissa	1,037	1,086	1,053	1,022	1,001	988	982
Punjab	832	799	836	844	854	865	886
Rajasthan	905	896	906	921	908	911	921
Sikkim	916	970	920	907	904	863	836
Tamil Nadu	1,044	1,029	1,012	1,007	992	978	978
Tripura	874	885	886	904	932	943	948
Uttar Pradesh	937	909	907	910	909	879	886
West Bengal	945	905	852	865	878	891	911
Union Territories							
Andaman and Nicobar Islands	318	303	574	625	617	644	761
Arunachal Pradesh	—	—	—	—	894	861	870
Chandigarh	771	743	763	781	652	749	770
Dadra and Nagar Haveli	960	940	925	946	963	1,007	974
Delhi	862	733	715	768	785	801	810
Goa, Daman and Diu	1,085	1,122	1,083	1,128	1,071	989	981
Lakshadweep	1,063	1,027	1,018	1,043	1,020	978	976
Mizoram	1,113	1,109	1,069	1,041	1,009	946	936
Pondicherry	—	1,053	—	1,030	1,013	989	985

Source: Census of India 1981.

Chapter III

Health

An analysis of the health situation in India might usefully start with the present status of health of the people, rather than with the existing system of health services in the public and private sectors.

The chapter on Demographic Trends represents a commentary on health, shedding as it does extensive light on the excessive mortality levels particularly of children and mothers.

Health is an obvious function of nutrition. Malnutrition in the family emerges as one of the underlying causes of ill health in India. That a variety of infections and infestations play further havoc with health should not be a surprise in a situation where economic and environmental factors are adverse to large numbers of the people. Their insufficient awareness about health and less than appropriate behaviour in health-related matters are also traceable to this social situation. It is clear that the answers to the problems of health have to be sought beyond the conventional health sector, as well as within it.

While there is a large volume of data on the prevalence of particular diseases, it is not easy to arrive at an overall assessment of the nature and extent of the disease burden of the country as a whole. Hospital statistics are incomplete and they relate mostly to serious cases and to those who have access to medical facilities. The pattern of drug consumption as seen from available statistics as well as common experience suggests a heavy incidence of communicable diseases like malaria, tuberculosis, gastro-enteritis and tetanus which together account for a large share of all deaths in India. Apart from these and the increasing load of degenerative diseases, there are a number of wide-spread deficiency diseases arising from the lack of nutrients like iron, iodine and vitamin A (discussed in the chapter on Nutrition).

Whatever information there is of the morbidity pattern, for India as a whole, is too fragmented to complete the picture. What is known is that the prevalence of diseases varies with the location, the seasons, literacy and income levels and various other factors. All the same, certain illnesses are common like fever, coughs and colds, headache and stomach pain, dysentery

and diarrhoea—besides injuries which occur frequently. The scientific means of preventing and treating all of these are part of time-tested wisdom; they are harmless, inexpensive and available. Yet these minor illnesses recur, interfering considerably with daily activity. The majority of the more dangerous diseases affecting the people, including several deficiency disorders, are linked to infections and infestations which directly contribute to, or indirectly aggravate, illness. This apparently formidable alliance can be broken by a combination of the knowledge and daily practice of simple laws of health and hygiene. The answer to endemic diseases and periodic epidemics must include personal hygiene, clean water, basic sanitation, immunization, nutrition and a social environment supportive of employment and equity. This calls for a joining of forces by the community, health profession and public administration.

1 Major health hazards

Malaria

The number of malaria cases came down from 75 million in 1952 to 100,000 in 1965 consequent on the national malaria eradication programme. However, there has been a resurgence of the disease, the incidence reaching a peak of over six million cases in 1976. Recent efforts have brought the figure down to a little over two million cases in 1982. Among the states harder hit are Madhya Pradesh and Orissa. While the preventive effort proceeds, the community health worker can be taught to suspect every case of fever with rigor as a potential case of malaria, to take a blood slide and thereafter give the necessary medication. Evaluations of the work of community health workers confirm their capability in initial diagnosis, collection of blood smears and presumptive treatment of malaria.

Tuberculosis

An estimated ten million people in India suffer from tuberculosis. Some 500,000 die of it annually. The incidence of new cases in children is about one per cent per year. While doubts have been expressed about the efficacy of the BCG

vaccine, it is known to prevent severe and often fatal forms of the disease like meningeal, miliary and disseminated TB. The government policy as well as professional opinion supports BCG immunization between 3 and 9 months of age.

About 0.4 per cent of tubercular cases are infectious. The national target for sputum examination at the primary health centre level for 1983–84 has been set at 400 examinations per primary health centre, or 3.43 million for the year. The main strategy of the government programme is early case detection, prompt domiciliary treatment and follow-up coupled with health education. As of 1983, there were 353 district TB centres, as many TB clinics and about 44,000 hospital beds. The major constraints in the management of the disease are an acute shortage of trained radiographers and X-ray films and a less than adequate level of involvement of multipurpose workers in case detection.

Leprosy

A conservative estimate of the number of leprosy cases was 3.2 million in 1982. Of these 15–20 per cent were of the infectious type; 25 per cent were having some disability or another; and 20 per cent were children.

Of the 412 districts in the country, 212 have a prevalence rate of five and above per 1,000 population. The states of Tamil Nadu, Andhra Pradesh, Orissa, West Bengal and Nagaland have a rate of nine or more.

The main elements of the national programme against leprosy continue to be:

- *Survey*: house to house, at schools, by family visits, through health educational efforts, voluntary reporting, contact examinations and referral services.
- *Training of workers*.
- *Education* through individual and mass communication.
- *Treatment*: domiciliary through network of outdoor clinics; and hospital admission for surgical interventions to correct deformities.

Multidrug therapy has lately been introduced with Dapsone in combination with Rifampicin, Clofazimine or Prothionamide and, when indicated, Isoniazid (INH) and Thioacetazone.

Among recent developments are a raise in priority at the policy level for the anti-leprosy programme, a substantial increase in the financial outlay for it, an administrative reform to make the district health officer responsible for supervision of the programme in the district and the proposed creation of a motivated cadre of anti-

leprosy personnel for deployment in the endemic districts.

Though the practical application may be some years away, research on leprosy vaccines is proceeding with hope in India as in several other countries. In a parallel development, screening of persons susceptible to leprosy is expected to become easier with diagnostic equipment to identify patients before symptoms manifest.

A national control programme exists against filaria and the diseases discussed in the foregoing paragraphs and, as mentioned in chapter IV also on *goitre* and other *iodine deficiency disorders* and *blindness* due to lack of Vitamin A. The control of *anaemia* (which massively undermines public health in India as discussed in that chapter) is yet to acquire the dimensions of a nationwide movement. Each of these diseases represents an oppressive cause of morbidity of children and mothers.

2 Maternal and child health

Samples surveys have yielded some data on the causes of infant, child and maternal morbidity and mortality.

The main causes of child death in the first year of life have been assessed as: tetanus, prematurity, pneumonia, and other diseases of the respiratory system, influenza, dysentery, typhoid, malaria, diarrhoea, and bronchitis, in rural areas.

The causes in urban areas were prematurity, tetanus, pneumonia, dysentery, diarrhoea, infantile liver, influenza, congenital malformations, malaria, and gastro-enteritis.

A reliable estimate of the fatal contribution of each of these, and other diseases is difficult to come by, for the whole country.

Infant mortality is influenced by several factors, falling into two broad groups: endogenous causes relating to maternal condition and exogenous factors arising from the environment into which the child is born. It is argued that the causes of infant mortality below the rate of 60 are mostly of endogenous origin while those for the range 80–120 are attributable mainly to external factors like diarrhoeal and respiratory infections. It has also been observed, as in parts of Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan, where the infant mortality rate is over 150, that a substantial proportion of it is due to neo-natal tetanus. In almost all these cases maternal malnutrition continues to be a major underlying cause.

Infant deaths within the first seven days (perinatal) are caused mostly by maternal, congenital and delivery-related factors. The more common among them are low birth weight, prematurity, anaemia and other forms of maternal malnutrition, pregnancy-related complications like antepartum

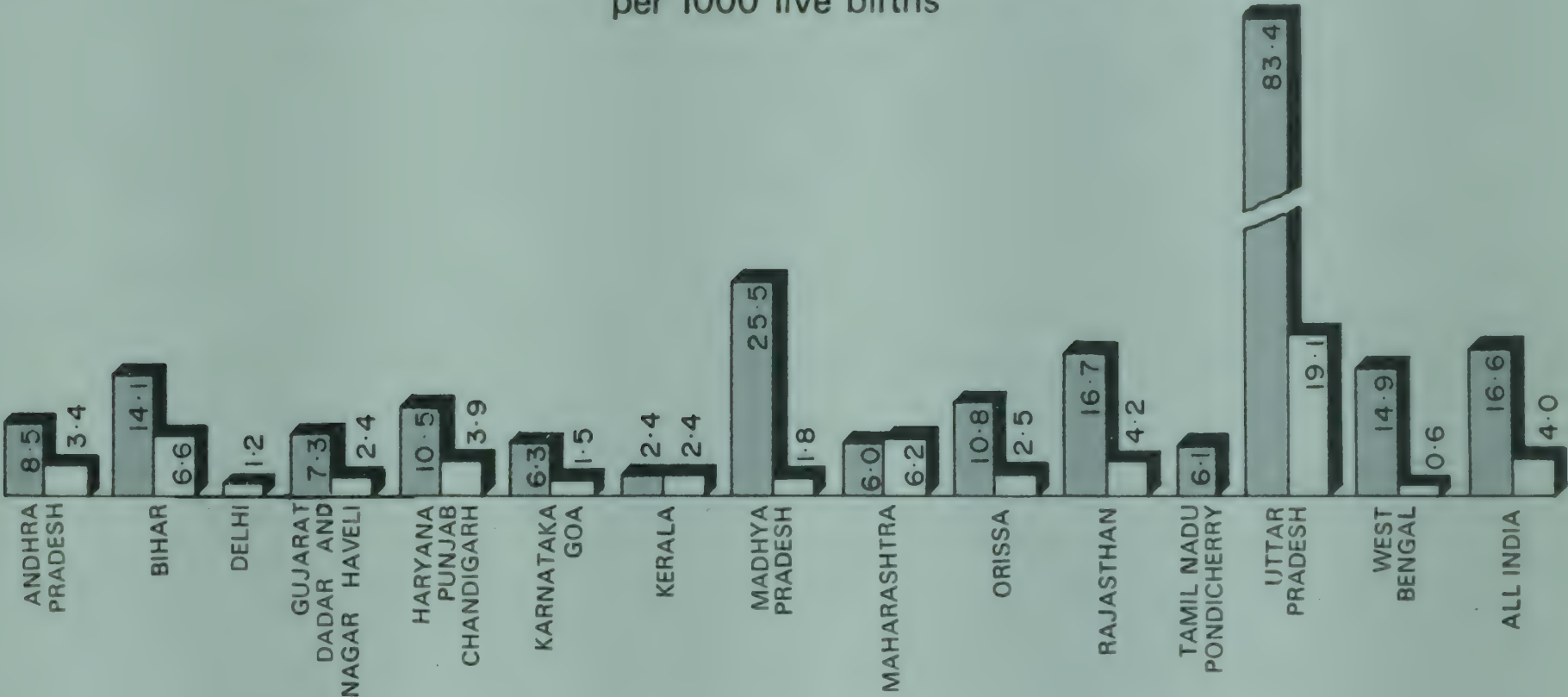
haemorrhage, toxæmia, congenital malformation, neo-natal infections and asphyxia.

The proportion of peri-natal deaths to infant deaths has remained more or less unchanged over nearly two decades. Two-thirds of the causes of peri-natal mortality have been assessed as preventable. For example, nearly 30 per cent of these deaths have been due to insufficient ante-natal attention, over 17 per cent due to failure of timely hospital admission and nearly seven per cent due to error or delay in the labour room.

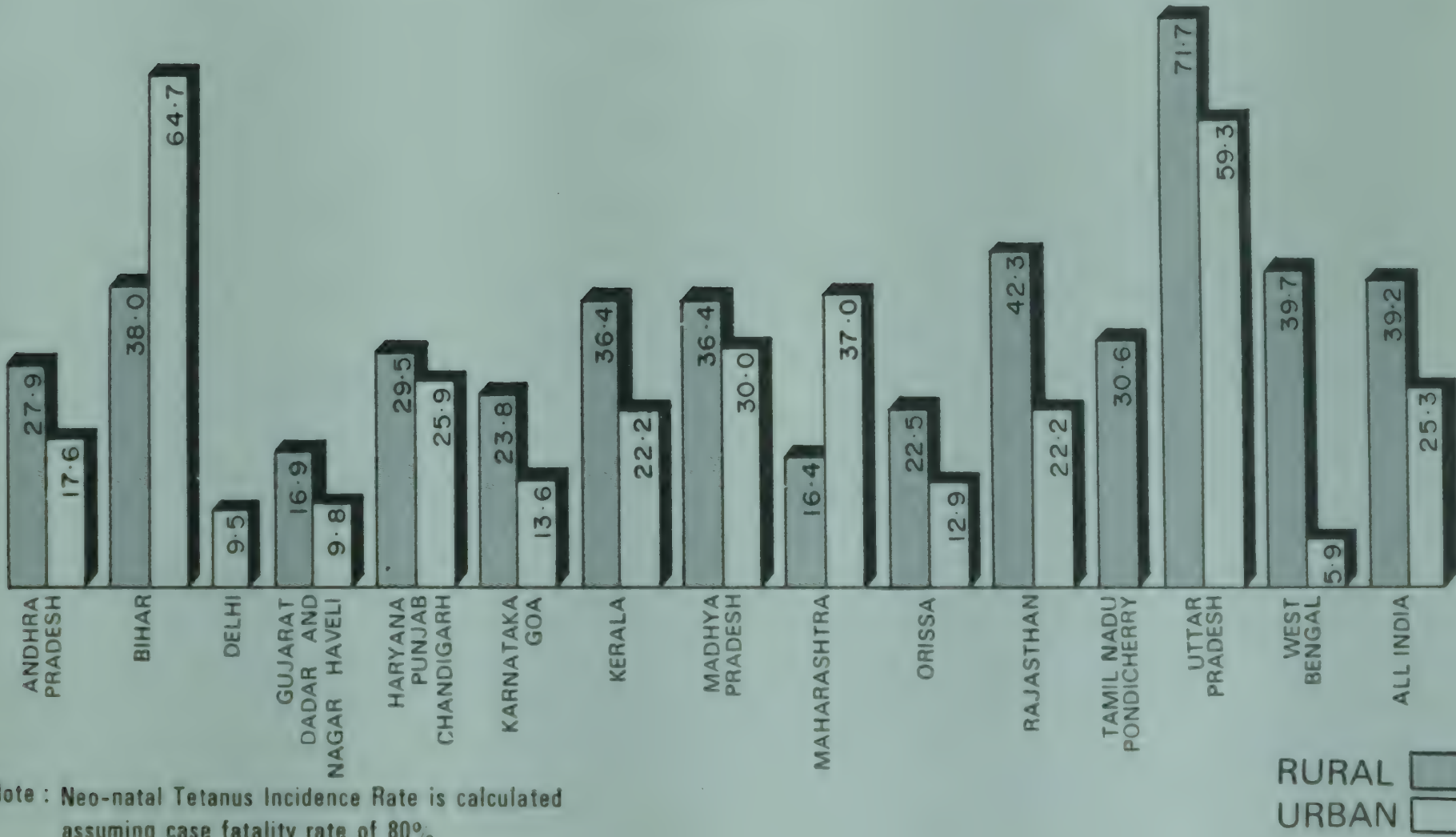
Among the maternal factors leading to peri-natal deaths are: prolonged and difficult labour and bleeding before delivery; toxæmia, diabetes, syphilis and anaemia are among the common contributory causes. Lack of oxygen, prematurity, congenital malformation and infections like tetanus are among the major direct causes of peri-natal deaths.

The rural-urban differences in the causes of infant mortality are significant. While tetanus is the leading cause in rural areas, prematurity takes its place in the towns. Pneumonia and

NEO-NATAL TETANUS INCIDENCE RATE
per 1000 live births



NEO-NATAL TETANUS AS CAUSE OF DEATH
PERCENTAGE



other respiratory disorders seem to be more common in the rural areas than in urban areas. So too malaria and typhoid.

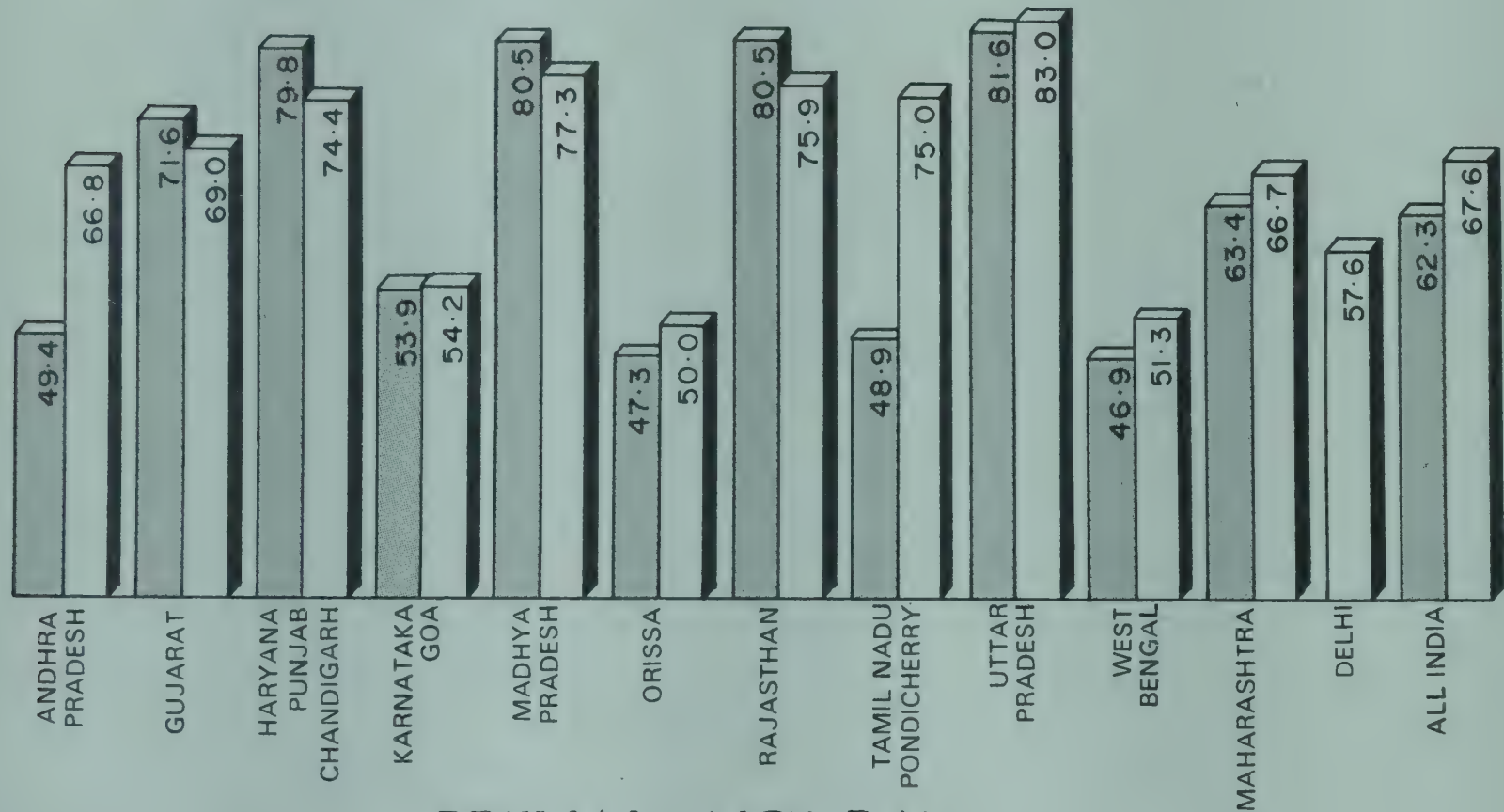
Tetanus: A 1981 sample survey revealed a high percentage of infant deaths due to neo-natal tetanus, in all the states. The proportion for Uttar Pradesh was the highest: 71.7 per cent rural and 59.3 per cent urban. This rural rate was thrice that from Madhya Pradesh. However, no deaths due to neo-natal tetanus were detected in the urban areas in Tamil Nadu and Pondicherry. In Bihar and Maharashtra neo-natal tetanus deaths appeared more in urban than in rural areas.

Tetanus as a cause of neo-natal death ranges

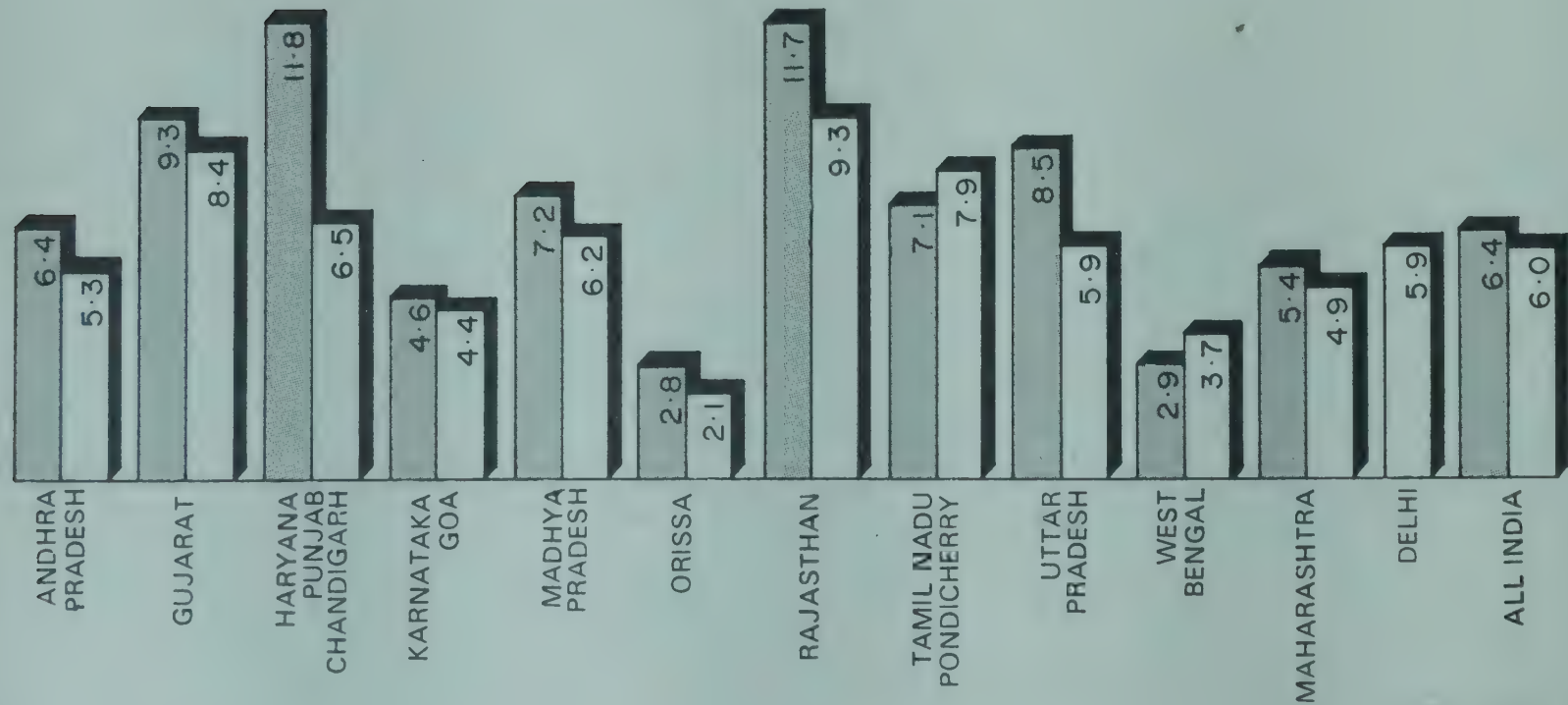
from 0–64.7 per cent in urban areas and from 16.4–71.7 per cent in rural areas. Surprisingly, mortality due to neo-natal tetanus is almost twice as high in urban areas as compared to rural areas in both Maharashtra and Bihar. Of tetanus-infected infants 26 per cent had been delivered by untrained birth attendants or family members. As many as 85.7 per cent of the mothers had not been immunized. An analysis of the survey data shows that nearly 230–280 thousand infants die within the first month of life due to neo-natal tetanus.


Measles: It is estimated that 200,000 children die each year in India consequent on complications from measles. The annual morbidity is

PERCENTAGE OF POLIOMYELITIS
AS CAUSE OF LAMENESS



PREVALENCE RATE
per 1000 children 5-9 years



RURAL 
URBAN 

estimated to be around 14 million. As against this situation only a negligible part of the eligible population was covered by measles immunization in 1982–83.

Poliomyelitis: Poliomyelitis is a serious public health problem in the country. The annual mortality of children in India from this disease is about 2000. Some 200,000 children each year are affected by it. The overall polio prevalence rate

not receive oral polio vaccine prior to their sickness.

Diarrhoea: Gastro-enteritis (including diarrhoeal dehydration) is a major killer of children. It is estimated that about 4.4 per cent of deaths in the first year of life and 30.5 per cent in 1–4 years are due to gastro-intestinal disorders. The incidence of acute diarrhoeal disease is estimated to be 500 per 1,000 infants (and 200 per 1,000

TABLE 23
Neo-natal mortality and tetanus incidence rate (sample surveys 1981).

State	Neo-natal mortality rate		*Neo-natal tetanus incidence rate		Neo-natal tetanus as cause of death per cent	
	Rural	Urban	Rural	Urban	Rural	Urban
Andhra Pradesh	24.5	15.4	8.5	3.4	27.9	17.6
Bihar	29.6	8.1	14.1	6.6	38.0	64.7
Delhi	—	10.2	—	1.2	—	9.5
Gujarat and Dadra & Nagar Haveli	34.5	19.6	7.3	2.4	16.9	9.8
Haryana, Punjab and Chandigarh	28.5	12.0	10.5	3.9	29.5	25.9
Karnataka and Goa	21.9	10.0	6.3	1.5	23.8	13.6
Kerala	5.2	8.6	2.4	2.4	36.4	22.2
Madhya Pradesh	56.0	4.8	25.5	1.8	36.4	30.0
Maharashtra	29.4	13.3	6.0	6.2	16.4	37.0
Orissa	38.3	15.5	10.8	2.5	22.5	12.9
Rajasthan	31.9	15.2	16.7	4.2	42.3	22.2
Tamil Nadu and Pondicherry	16.0	11.1	6.1	0.0	30.6	0.0
Uttar Pradesh	93.0	25.8	83.4	19.1	71.7	59.3
West Bengal	30.0	8.1	14.9	0.6	39.7	5.9
Total:	33.9	12.5	16.6	4.0	39.2	25.3

Per 1,000 live births

*Assuming case fatality rate of 80 per cent

Source: Directorate General of Health Services, New Delhi

per thousand in 5–9 year children is estimated at 6.4 in rural areas and six in urban areas. A survey by the Ministry of Health revealed that poliomyelitis was a major cause of lameness among children, 67.6 per cent in urban areas and 62.3 per cent in rural areas. Over 60 per cent of the children became lame due to polio before two years of age and over 75 per cent contracted the disease by three years of age. In most of the states, the majority of polio-affected children did

pre-school children). About 1.5 million children under five years die each year of diarrhoea. Sixty to seventy per cent of children who die of diarrhoea, die of dehydration which can be avoided by prompt and adequate rehydration at an early stage. That access is limited even to this simple remedy, is clear from the fact that an estimated 2,500 children in India die of dehydration each day. True, the government distributes millions of packets of oral rehydration salts (ORS)

TABLE 24
Estimated poliomyelitis incidence rate (sample surveys 1981)

States	Percentage of Poliomyelitis as cause of lameness		Prevalence rate (per 1,000 children 5-9 years)		Annual incidence rate (per 1,000 children 0-4 years)	
	Rural	Urban	Rural	Urban	Rural	Urban
Andhra Pradesh	49.4	66.8	6.4	5.3	1.7	1.4
Gujarat	71.6	69.0	9.3	8.4	2.5	2.2
Haryana, Punjab and Chandigarh	79.8	74.4	11.8	6.5	3.1	1.7
Karnataka and Goa	53.9	54.2	4.6	4.4	1.2	1.2
Madhya Pradesh	80.5	77.3	7.2	6.2	1.9	1.6
Orissa	47.3	50.0	2.8	2.1	0.8	0.7
Rajasthan	80.5	75.9	11.7	9.3	3.1	2.5
Tamil Nadu and Pondicherry	48.9	75.0	7.1	7.9	1.9	2.1
Uttar Pradesh	81.6	83.0	8.5	5.9	2.3	1.6
West Bengal	46.9	51.3	2.9	3.7	0.8	1.0
Maharashtra	63.4	66.7	5.4	4.9	1.4	1.3
Delhi	—	57.6	—	5.9	—	1.6
Total:	62.3	67.6	6.4	6.0	1.7	1.6

Source: Directorate General of Health Services, New Delhi.

through its network of hospitals, primary health centres and village health guides. These are inadequate to meet the need, assuming they are available in time to the needy. But home based oral rehydration through a simple solution of water, salt and sugar in the right proportions (or other fluids like rice water or coconut water) is yet to become common practice, mainly because of lack of popular awareness, promotional momentum and professional interest.

In an analysis (by Arole and Rohde) the aver-

The pattern of causes of child mortality tends to change with the age of the child. Typhoid, dysentery and diarrhoea emerged as leading causes of deaths in children of 1-5 years (1979 survey). In another analysis, diarrhoea was found to be the major cause in rural Ludhiana (1978-80) and rural North-Arcot (1970-72), while measles was the first cause, followed by diarrhoea, in urban North-Arcot (1970-72), in respect of children of 1-4 years.

For children below one year, the most common

TABLE 25
Deaths from diarrhoeal disease with averages per month in infancy and early childhood.

Age of death	Palghar rural community		Ludhiana three rural centres		North Arcot district			
	No.	Average per month	No.	Average per month	Rural		Urban	
	No.	Average per month	No.	Average per month	No.	Average per month	No.	Average per month
Infant	89	7.4	49	4.1	69	5.8	113	9.4
0-5 months	59	9.8	26	4.3	37	6.2	58	9.8
6-11 months	30	5.0	23	3.8	32	5.3	55	9.2
1-4 years	—	—	11	0.2	90	1.9	34	0.6

Source: Arole and Rohde, 'Organization of Health Services and Training of Physicians for Child Health Services', 1983.

age number of diarrhoeal deaths per month in three study areas was found to be highest in the zero to five months period:

ten sicknesses have been identified for both rural and urban areas by the Registrar General's 1979 survey of infant and child mortality. Presumably

TABLE 26

Child deaths (1-4 year per 1000 population) in Ludhiana and North Arcot Districts.

Underlying causes	Ludhiana three rural centres		North Arcot district			
	Number	Rate	Rural Number	Rate	Urban Number	Rate
All causes	49	6.9	358	24.0	163	15.0
Diarrhoeal diseases	11	1.6	90	6.0	34	3.1
Measles	8	1.1	37	2.5	36	3.3
Other infectious diseases	1	0.1	29	1.9	20	1.8
Nutritional deficiency	5	0.7	—	—	—	—
Disease of nervous system and sense organs	1	0.1	1	0.1	1	0.1
Disease of respiratory system	8	1.1	2	0.1	—	—
Congenital anomalies	1	0.1	—	—	—	—
Other and unknown causes	12	1.7	191	12.8	67	6.1
External causes	2	0.3	8	0.5	5	0.5

Source: Arole and Rohde, 'Organization of Health Services and Training of Physicians for Child Health Services', 1983.

the undercurrent of chronic protein energy malnutrition, micro-nutrient deficiencies like anaemia from lack of iron, parasitic infestations and diarrhoeal episodes have not been included in these findings:

- In rural areas: septicemia and pyemia (10.63 per cent), diseases of respiratory system except bronchitis and bronchopneumonia (10.03 per cent), whooping cough (5.9 per cent), tuberculosis of meninges and central nervous system (5.34 per cent), dysentery (5.01 per cent), bronchitis (3.62 per cent), influenza (3.37 per cent), scabies (3.10 per cent), angular stomatitis (2.80 per cent), and malaria (2.59 per cent).

- In urban areas: septicemia and pyemia (10.57 per cent), respiratory diseases except bronchitis and bronchopneumonia (8.42 per cent), whooping cough (7.10 per cent), tuberculosis of meninges and central nervous system (6.05 per cent), bronchitis (4.78 per cent), angular stomatitis (4.25 per cent), dysentery (3.9 per cent), diseases of circulatory system (3.5 per cent), infectious hepatitis (3.36 per cent), and malaria (2.94 per cent).

3. Maternal mortality

In considering the factors affecting health status, it would be logical to see the mother and child as

TABLE 27

Percentage of deaths by causes related to child birth and pregnancy (maternal)—All India—1976 to 1980

Specific cause	1976	1977	1978	1979	1980
Abortion	11.6	8.2	11.0	11.7	12.5
Toxaemia	10.4	11.2	21.2	16.1	12.4
Anaemia	22.1	15.9	14.6	15.0	15.8
Bleeding of pregnancy and puerperium	17.2	20.6	18.2	20.0	15.8
Malposition of child leading to death of mother	8.6	9.4	9.5	10.5	13.4
Puerperal sepsis	13.5	18.8	12.4	11.7	12.4
Not classifiable	16.6	15.9	13.1	15.0	17.7
Total	100.0	100.0	100.0	100.0	100.0
Sample No. of deaths	163	170	137	180	209
Per cent to total deaths	1.1	1.0	1.0	1.1	1.2

Source: Vital Statistics Division, Office of the Registrar General.

a biological unit.

Maternal mortality has slightly declined over the past decade, yet deaths associated with pregnancy and child birth continue to be high. In 1971, maternal deaths per 100,000 live births was 376.3. This increased to 418 in 1972. The 1972 data reflect (among classified causes) the highest maternal mortality rate of 56.2 for puerperal sepsis as well as for abortions, followed by anaemia of pregnancy (50.2) and eclampsia (46.2). Postpartum haemorrhage registered a mortality rate of 36.1 closely followed by haemorrhage during delivery and placenta praevia (30.1 each).

TABLE 28
Distribution of maternal deaths due to causes related to child-birth and pregnancy-1980

Causes*	Total Deaths		Age groups in years							
			15-24		25-34		35-44		45-54	
	Number	%	Number	%	Number	%	Number	%	Number	%
Abortion	26	12.5	12	13.7	7	8.1	7	21.2	—	—
Toxaemia	26	12.4	11	12.5	10	11.6	5	15.2	—	—
Anaemia	33	15.8	12	13.6	15	17.5	14	12.1	2	100.0
Bleeding of pregnancy and puerperium	33	15.8	12	13.6	20	23.3	1	3.0	—	—
Malposition of child leading to death of mother	28	13.4	11	12.5	10	11.6	7	21.2	—	—
Puerperal sepsis	26	12.4	14	15.9	7	8.1	5	15.2	—	—
Not classifiable	37	17.7	16	18.2	17	19.8	4	12.1	—	—
All causes	209	100.0	88	100.0	86	100.0	33	100.0	2	100.0

*The survey adopted the non-medical list of causes of death using a sixfold classification of causes into (1) accidents and injuries, (2) child birth and pregnancy (the causes listed in the table above), (3) fevers, (4) digestive disorders, (5) coughs (disorders of the respiratory system), (6) disorders of the central nervous system, (7) diseases of the circulatory system, (8) other clear symptoms, (9) causes peculiar to infancy, (10) senility, (11) the rest.

In a 1980 survey of causes of death, the causes related to child birth and pregnancy reported by para-medical personnel in rural areas accounted for 1.2 per cent of the number of deaths reported—a level that remained constant over 1976–80. Anaemia continues to be the most serious hazard to maternal survival. Anaemia aggravates complications of pregnancy such as eclampsia, ante-partum haemorrhage, sepsis and genito-urinary infections. Puerperal morbidity has been found to be three to four times higher in women with haemoglobin levels below 6.5 grams per cent as compared to women with normal haemoglobin levels. Anaemia contributes significantly to premature births, low birth weight babies and to peri-natal mortality. Maternal morbidity of many kinds are associated with malnutrition.

The distribution of maternal mortality by age-group reveals that 43 per cent in each of the age-groups 15–24 years and 25–34 years died

due to causes associated with pregnancy and childbirth. The details are given in table 29.

Behind the set of immediate causes of maternal ill health lies the interplay between malnutrition and frequent child bearing. Pregnancies below 18 years and above 35 years have been found to be hazardous for maternal health and survival, especially of malnourished mothers. Studies suggest that if a woman gave birth between the age of 20 and 34 the maternal mortality would be reduced, for that reason alone, by 19–25 per cent. The complex inter-

relationship between causal factors of maternal and child ill health, makes it difficult to isolate one factor from the others. However, three sets of factors may be considered as contributing to the health situation:

- the mother's access to health care services before, during and immediately after birth;
- human settlement patterns in relation to health-related education, safe water supply and basic sanitation; and
- income and consumption levels especially in relation to food.

The social *demand* for health care is related not only to the ability in terms of time, energy and money to seek it but also the perception of need through better awareness. The *supply* side depends on the existence, location, quality and nature of public health services.

A comparative analysis of the mortality situations in the states of Kerala and West Bengal leads to the inference that the lower mortality level in Kerala can be attributed mainly to its better developed social services (education, health facilities and communication) and partly to its better environmental and hygienic conditions—as against the higher level of economic development in West Bengal.

4 Health Services

India's National Health Policy was passed by parliament in December 1983. The statement of

medical profession itself that have enquired into one aspect or another of the health system in the country. The present phase may be seen as one that marks the tension of transition—from curative preoccupations on behalf of a minority to a balanced blend of preventive, promotive and curative concerns on behalf of all the people.

India has the largest number of medical personnel trained in different systems of medicine in the developing world, according to the Ministry of Health.

The following figures must be seen in perspective. Of the 662,000 registered medical practition-

TABLE 29
Trained health personnel

Physicians	Number	Percent
Allopaths	268,712	40.59
Ayurvedic	233,624	35.28
Homeopaths	112,638	17.00
Unani	28,737	4.34
Siddha	18,157	2.77
Total	661,868	100
Other categories		
Dentists	8,648	
Nurses	150,399	
Midwives	144,820	
Multipurpose workers	119,000	
Village health guides	242,161	
Traditional birth attendants	445,000	

Note: The figures relate to the years 1981 to 1983.
Source: Ministry of Health and Family Welfare

policy describes the present system of health services as "inappropriate and irrelevant" to the needs of the majority. The system as it has evolved from the colonial period is an accumulation of infrastructure, personnel and programmes. The emphasis has been on centralized facilities rather than on far reaching services, on hardware rather than on software, more on quantity than on quality. It is broadly agreed that the orientation of the health system is towards the urban rich. Its derivation is western at the expense of indigenous answers, its bias is curative, clinical, pharmaceutical and technologic. Largely isolated from health-related sectors like nutrition, education and sanitation, it stands at some distance from social and economic realities.

These perceptions have in fact been underlined by successive reports, over the past 40 years, of committees led by leaders from the

ers in India, the majority are private practitioners. Of this total number, only two-fifths are allopathic doctors. And the allopathic doctors in the public health system are about a fourth of the total number of curative and preventive personnel of all types employed by government.

As is seen from the data, the strength of the paramedical and community health worker category is large and necessarily increasing. In addition, some 60,000 anganwadi workers are in position under the scheme of the integrated child development services (ICDS) and they are actively involved in immunization, health checkup and health education for children of pre-school age and expectant and nursing women. More positions for anganwadi workers have been, and are being, sanctioned as part of the thrust towards preventive care of children of pre-school age.

The physical growth of the health system may be seen against the above trend. There are today

TABLE 30
Expenditure on health in India under the Five-Year Plans (Rs in million at current prices)

	1951-56	1956-61	1961-66	1969-74	1974-79	1980-85 (allocation)
Public sector plan outlay	19,600	46,720	85,770	157,240	394,260	975,000
Health	980 (5.0)	2,140 (4.6)	2,260 (2.6)	3,370 (2.1)	7,610 (1.9)	18,210 (1.8)
Family Planning	—	20	250 (0.3)	2,780 (1.7)	4,920 (1.2)	10,100 (1)

Note: Figures in brackets are percentages to total plan outlay.
Source: Planning Commission.

some 6,800 hospitals with a total bed capacity of 476,000. The number of primary health centres is over 5,600, of which 300 have been upgraded to 30-bed hospitals. There are some 52,000 sub-centres. The annual admission capacity of the 106 medical colleges is around 11,000. The doctor-population ratio of 1:3,600, as of 1980, represents a significant improvement over the past few years, although considerable inter-state disparities continue.

5 Health expenditure

Public health expenditure has expanded in per capita terms from Rs. 9.44 in 1974-75 to Rs. 17.29 in 1978-79. The actual expenditure on health in the public sector outlay in the Fifth Five Year Plan (1974-79) was Rs. 7,610 million. The corresponding allocation in the Sixth Plan (1980-85) is Rs. 18,210 million. The expenditure on health as well as on family planning through the various five year plans is shown in table 30.

6 The non-government sector

Apart from the government health system, there is a large number of privately organized hospitals, health centres and dispensaries. Some of them extend concessional medical care to the economically weaker sections.

Even more significant are the 70 or more community health projects—organized by committed health workers in various parts of India. They cater to population groups ranging in strength from 1,000 to 40,000 or more. Some of them are hospital centred while the others are community based. Some are run on the cooperative principle using people's contributions while others are organized as health insurance schemes. These projects vary in range and scope. So too the emphasis, which may fall on nutrition, mother and

child care, family planning and control of communicable diseases. The source and magnitude of funding may also differ. But all these projects have a basic orientation towards the primary health care approach.

Among the initiatives taken by some of these community health projects are:

- Training and equipping traditional health attendants;
- Training of community health workers to identify "high risk" mothers and infants for intensive care;
- Greater attention by communities to environmental sanitation;
- Training of health workers in home management of diarrhoea;
- Training of health workers in ante-natal and infant care, especially in immunization; and
- Education in health and nutrition.

The concept of community health care is being imbibed by some of the area development projects in the government sector. For example, a health plan developed by the Ministry of Health is being implemented in 12 states in over 46 districts with assistance from various international and bilateral agencies. The training and deployment of paramedical workers is an important element of this effort.

7 Impact of health services

A number of studies reveal that the massive growth of infrastructure, personnel and expenditure has had less than optimal impact on the health status of the people. Some of the reasons for the gap between effort and effect are obvious, like the weaknesses in areas like nutrition, education, safe water supply and sanitation. Certain other reasons relate to the functional

weaknesses within the health sector. Some of these are briefly discussed below:

- A sizeable proportion of the sanctioned number of staff positions under various categories in the public health system remain unfilled at any given time. One study (Bose and Tyagi) found 20 per cent posts were vacant. A more recent one reckoned that 5,000 of the 14,500 posts sanctioned for doctors in primary health centres were vacant at the end of March 1983 (Arole and Rohde);
- The system of primary health centres, though well conceived and endowed with resources, lacks leadership and managerial skills;
- The present training of doctors is examination-oriented: didactic, clinical and curative in emphasis. While social aspects of diseases are recognised, students are not given experience in community interaction nor a role of responsible leadership of a health team, nor managerial competency;
- Medical colleges have often interpreted community health services as their own outreach operation, rather than as supportive of the responsibility for the health of a defined population group.

The scheme of community health workers (now called village health guides) has been conceived as an essential element of the primary health care approach. It has expanded impressively to a total strength of about 250,000. Critical appraisals of the working of the scheme have shed some light on the following problem areas:

- The community has an apathetic attitude towards environmental sanitation, in contrast with quick allopathic cure preferably through injections;
- The role of the community tended to be that of a passive recipient of curative services from the community health worker;
- The community health worker appeared to confine himself to treatment of minor ailments and first aid—without being able to enlist people's cooperation for deeper health-related issues like environmental sanitation or personal hygiene;
- The training of community health workers was inadequate for imparting health education or preventive care;
- A majority in the medical profession, particularly private practitioners, was against or unenthusiastic about the community health workers scheme;

- A provider approach rather than a participatory spirit characterised the community health workers scheme;
- There was some role conflict between the multipurpose worker and the community health worker;
- The one aspect that people appreciated was the availability of an immediate resource for health care, particularly drugs free of cost.

As of March 1983, some 4,247 primary health centres had community health guides attached to them. A recent official appraisal notes that community health guides have made some impact in those states (like Gujarat, Maharashtra and West Bengal) where their selection and training were properly conducted. In these states they have done useful work in malaria control, family planning, health education, mother and child care, disinfection of water wells...

8 Coverage and use

It is difficult to assume that an increase in the number of health institutions would automatically enhance utilization of health services. It has been found that the effective coverage of primary health centres varied from 54 per cent of the population to 16 per cent (Bose and Tyagi). Government sources indicate an average coverage of 40-50 per cent of the relevant population by these centres in ante-natal care.

Another study (Mehta, Khan and Gandotra) reveals other sets of problems, from the viewpoint of both the health personnel and the people.

- The health personnel found the following typical hurdles in their way: illiteracy of the people and their traditional beliefs; too large an area to be covered; lack of transportation; and lack of medicines or their irregular supply.
- In the perception of the people, the factors inhibiting utilization of health services were; non-availability of medicines; too long a distance to the primary health centre; lack of transportation; illiteracy and pre-existing beliefs.

Some other reasons for low utilization of the established facilities at the primary health centres have been mentioned; better attention by private doctors and better medicines outside, and easier access to them; the tendency of some primary health centre doctors to ask for payment for better treatment; long wait and non-availability of doctors; and improper behaviour of health staff. The point favourable to government health cen-

tres and hospitals was that the treatment was free.

9 Primary health care

India is a signatory to the Alma Ata Declaration of 1978 which committed the country to the primary health care approach based upon equity, access and social justice. The national health policy subscribes fully to these principles. Several of the components of primary health care like nutrition and water, basic sanitation, health education, self-care in respect of simple common diseases, prevention and control of locally endemic diseases, family planning, and maternal and child care have been discussed in this or another chapter. The two other components of primary health care are essential drugs and immunization against preventable diseases.

10 Essential drugs

According to WHO, some 250 drugs are considered essential. India has over 5,000 licensed drug manufacturers who produce 25,000 different formulations—compared to many times less in industrialized countries.

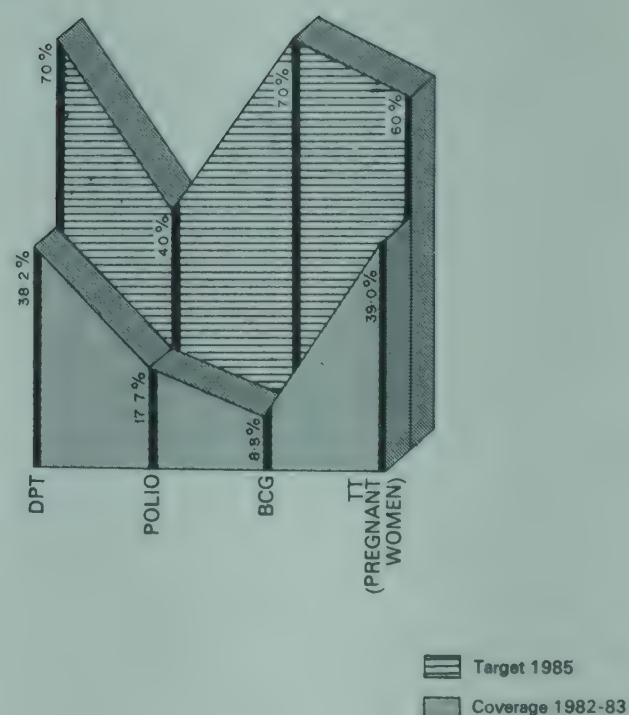
It is revealing that developing countries spent 40–60 per cent of total health expenditure on drugs, compared to 10–20 per cent by the developed countries. A fifth of India's population is estimated to be using drugs, and they live mostly in urban areas. India imports a large quantity of life saving drugs and several vitamins. The 1980–81 import bill was Rs. 1,128 million.

Certain drugs (notified by government) are to be consumed only under medical supervision. A recent study (by the National Institute of Nutrition) of samples from an urban population of 2.5 million served by 330 retail pharmaceutical shops revealed some interesting patterns in the marketing, distribution, prescription and use of drugs and the resulting medical, social and economic consequences:

- Less than two-thirds of the doctors indicated their names in the prescriptions;
- The self-medication rate was as high as 46 per cent;
- Nutritional products topped the list among doctors' prescription while analgesics came first among self-administered drugs;
- Broad spectrum antibiotics were being liberally used. More than 30 per cent of doctors' prescriptions and over 12 per cent in self-medication were for antibiotics; among the self-medications 30 per cent purchased antibiotics for less than a day, and only 18 per cent purchased it for a full

course. Even on doctor's prescription only 40 per cent purchased antibiotics for a full course (a minimum of five days).

IMMUNIZATION COVERAGE 1982-83
AND TARGET FOR 1985 FOR ELIGIBLE
POPULATION (0-1) YEAR



This and earlier surveys suggest that widely advertised vitamins and tonics (which account for about 15 per cent of the total value of drug production in India) are probably being largely misused both by doctors and the public as in the matter of antibiotics which constitute an estimated half of the drug bill in India. There is an obvious need for a more rational drug policy.

11 Immunization

Nearly 20 to 30 per cent of child deaths are due to six common immunizable childhood diseases. Immunization against preventable diseases is central to the concept of the primary health care. India has a good proportion of the global tally of five million children who die each year—and an equal number who are disabled—unprotected against easily preventable diseases. As noted earlier, *tetanus* is a leading killer of newborn babies. On an average, *measles* kills two out of every 100 children it strikes in India; the proportion is as high as 10 in 100 in malnourished groups. Hundreds of thousands of Indian children are afflicted by *tuberculosis* and those who escape death are prone to suffer permanent brain damage or bone deformity. *Whooping cough* (pertussis) ravages the respiratory systems of similar numbers. *Diphtheria* kills a large number of children and leaves many more permanently affected with damage to heart and

brain. Few die of *poliomyelitis* but the lives of tens of thousands are shattered for want of an inexpensive vaccine.

Of all health services, immunization is the most simple and cost-effective. The expanded programme on immunization (EPI) was launched in 1978 in India. There are more than 20 million eligible children for immunization each year. In 1982-83, the actual coverage was 38.2 per cent for DPT, 17.7 per cent for polio, 8.8 per cent for BCG and hardly any for measles. The measles vaccine is not made in India while the others are, though not to the required quantity.

The national aim to achieve 85 to 100 per cent coverage in all the six diseases by 1990 will be possible only if the programme rapidly accelerates in the next few years. While *universal* coverage has been achieved for limited population groups, moving to full *national* scale would

involve new institutional mechanisms, complementary channels, alternative approaches, higher management skills, additional technological and budgetary support and, above all community involvement.

TABLE 31

Immunization coverage 1982-83 and target for 1985 for eligible population (0-1 year)

Vaccine	Percentage	
	Coverage 1982/83	Target 1985
DPT	38.2	70
Polio	17.7	40
BCG	8.8	70
TT (pregnant women)	39.0	60

Source: Director General of Health Services.

Chapter IV

Nutrition

1 Food production and consumption

For achieving a permanent improvement in the the nutritional status of the people, there should be increase in the production of food as well as the purchasing power of those in need of improved nutrition. A recent estimate by the Food and Agriculture Organization (FAO) puts the number of malnourished people in India at around 200 million, almost half the world's total. This raises the issue to the realm of policy affecting food and access to it.

As is known, India has made notable progress in foodgrain production, registering an increase from 50 million tonnes in 1950 to an estimated 145 million tonnes in 1983-84, an annual increase of 3.04 per cent, well above the population growth rate of 2.5 per cent per annum. From 133.1 million tonnes in 1981-82, there was a decline to 126.6 million tonnes the next year, against a target of 141.5 million. This was due to the drought in many states following a failure of the monsoons. Subsequently the rainfall was favourable and current targets are likely to be fulfilled.

Despite reasonably good foodgrain production, the apparent level of per capita food consumption over the past two decades has remained rather stagnant as the following table illustrates.

TABLE 32
Per capita apparent consumption of food-grains

	Grams per day
1951-53	397
1961-63	458
1971-73	452
1977-79	458
1980	411
1981	454
1982	454

Note: The 1977-79 figure is 15.4 per cent more than that of 1951-53.
Source: Manrai, M.L. and Bhatnagar, D.S., "Food Strategy for the Eighties" *Kurukshetra*, December 1983.

There is however a significant change in the pattern of consumption over the past three

TABLE 33
Changing pattern of foodgrain consumption

Year	Grams per day			
	Rice	Wheat	Coarse grains	Pulses
1951-53	161	62	131	61
1961-63	197	81	116	64
1971-73	187	116	103	46
1977-79	189	124	101	44

Source: Manrai, M.L. and Bhatnagar, D.S., "Food Strategy for the Eighties", *Kurukshetra*, December 1983.

decades. While the consumption of wheat has almost doubled in 30 years, that of pulses has declined. Thus despite a small improvement in the per capita consumption of cereals, the intake of vegetable protein from foodgrains has declined.

Considerable inter-state variations in food consumption levels have been observed. For instance, the apparent consumption of cereals in Punjab and Haryana is almost twice the level of states like Gujarat and Bihar. Low availability coupled with poor purchasing capacity might have contributed towards low consumption. Redressing regional imbalances in agricultural growth was proposed in the Sixth Five Year Plan as a measure to improve food availability. However significant differences between regions do persist in food production, supply and nutritional status—raising issues of “productive” as well as “distributive” justice.

An analysis of percentage distribution of per capita private consumption expenditure on different items of food reveals interesting time trends. For food as a whole the percentage consumption expenditure has declined from 63.7 in 1970–71 to 56.4 in 1979–80. This has remained fairly stable at 56.6 in 1982–83. Of this total allocation on food expenditure, cereals and substitutes constituted 28.8 in 1970–71, a share which declined to 24.4 in 1982–83; over the same period edible oils declined slightly from 5.2 to 4.4. The share of meat, fish and egg, sugar and gur remained constant over the 12 years while consumption expenditure on milk and milk products registered a slight increase from 7.7 to 8.0. The per capita figure masks variations between the different economic strata.

2 Malnutrition

The State of the World's Children report 1984 noted that only about one per cent of the world's children are visibly malnourished. But over a quarter of the children in the developing world suffer from invisible malnutrition. This invisibility renders its prevention and cure difficult. Use of growth charts is the best way to monitor health and nutritional status of children and to identify children with invisible protein energy malnutrition.

As a review of several nutrition programmes by the Harvard Institute of International Development concluded: “The average moderately malnourished child in the 6–24 month age range looks entirely normal, but is too small for his or her age, has lowered resistance to infection, and therefore easily succumbs to illness. The child receiving only 60 per cent of calorie requirement may give no outward sign of hunger beyond a

frequent desire to breastfeed.”

Malnutrition is perceived at two levels: individual and societal. At the individual level malnutrition refers to nutritional disorders arising from four major causes:

- (i) Insufficient food intake causing hunger and consequent undernutrition through calorie as well as protein deficiency;
- (ii) Qualitatively insufficient food intake causing nutrient-specific disorders such as protein deficiency, iron deficiency anaemia, iodine deficiency disorders, and xerophthalmia caused by lack of vitamin A;
- (iii) Malabsorption, underuse and improper use of nutrients or breaking down of body tissues due to illness or genetic or environmental condition, leading to secondary malnutrition. Typical examples are intestinal disorders and infectious diseases;
- (iv) Overnutrition leading to obesity, diabetes, hypertension and heart ailments.

While the first three are associated with poverty, the fourth is related to affluence.

The commonly noted effects of malnutrition on the individual are:

- reduced activity (saving on energy consumption);
- reduced growth of children; that is, reduced height for age (stunting) and reduced weight for height (wasting);
- increased susceptibility to, and more serious effects from, some infections like measles; and disorders due to non-absorption of micro-nutrients like iron causing anaemia; poor use of vitamin A because of low energy intake leading to eye impairment and in time blindness;
- death in the case of severe and prolonged malnutrition.

Depending on the degree of malnutrition, the effects are particularly serious for infant and young children who need an adequate quality and quantity of food for their physical and mental growth, and for realizing their full genetic potential.

Malnutrition at the social level is a consequence of the relation of people with food. Food as a means of people's health is linked to many factors like: distribution of income, “entitlement” to food, production and commercial distribution of food, family knowledge and behaviour about the use of food, epidemic and environmental diseases affecting bodily needs, the use the body makes of food, and government and community policies and services such as food subsidy to low

income families.

Adequate nutrition is widely accepted as part of the purpose of development, and need not be justified as a means to it. In developing countries malnutrition is a principal obstacle to human productivity and to socio-economic development, because of its immediate effect on worker absenteeism and productivity; and because of effects on initiative; learning capacity and absorption of schooling; health; strength and length of working life; responsible parenthood (linked to infant and young child mortality); social mobility; and well-being. Further, nutrition programmes can be a direct and effective way of increasing the income of the poorest groups.

Household level nutrition surveys periodically done by the National Nutrition Monitoring Bureau provide data on nutritional status of children for

the eight states surveyed. An analysis of trends from 1969 to 1980 is presented in Table 34. The percentage of 1–5 year children suffering from severe malnutrition (Gomez classification based on weight for age) has decreased from 21.8 in 1975 to 4.7 in 1980. The percentage of mild and moderate malnutrition has however not decreased significantly. Comparison of the eight states covered by the 1980 sample survey revealed that the highest percentage of severe malnutrition (9.9 per cent) among 1–5 year old children was observed in Gujarat, which also had the lowest percentage (5.2 per cent) of children with adequate nutrition. West Bengal had only 2.5 per cent children with severe malnutrition while Kerala had the highest percentage of children of normal nutritional status. (22.1 per cent). See Table 35.

TABLE 34

Percentage distribution of 1–5 year children according to weight for age

Year	No. of States	N	Degree of malnutrition (Gomez classification)			
			Normal 90%	Mild 75–90%	Moderate 60–75%	Severe 60%
1969	6	18,000	3.0	14.0	65.0	18.0
1974	9	2,410	3.8	21.9	53.8	20.5
1975	7	1,721	3.4	22.1	52.6	21.8
1976	9	6,775	10.6	41.1	39.8	8.5
1978	10	4,713	14.3	42.4	34.9	8.4
1980	8	4,008	14.8	47.9	32.6	4.7

Source: National Nutrition Monitoring Bureau, National Institute of Nutrition, 1981.

TABLE 35

Percentage distribution of malnourished children, 1–5 years, (selected states) 1980

States	N	(Gomez classification)			
		Normal 90%	Mild 75–90%	Moderate 60–75%	Severe 60%
Kerala	172	22.1	54.6	18.6	4.7
Tamil Nadu	568	19.0	49.1	26.6	5.3
Karnataka	752	13.3	46.3	35.5	4.9
Andhra Pradesh	833	14.7	49.4	32.1	3.9
Gujarat	271	5.2	41.3	43.6	9.9
Orissa	211	12.3	41.3	39.8	6.6
West Bengal	722	11.8	50.7	35.0	2.5
Uttar Pradesh	479	20.4	46.6	27.5	5.5
Pooled (India)	4,008	14.8	47.9	32.6	4.7

Source: National Nutrition Monitoring Bureau, National Institute of Nutrition, 1981.

Further analysis of the sample households for calorie and protein adequacy revealed the following:

of Karnataka. In the former project, a baseline survey through house to house visits was conducted in 1974 of children under six years,

TABLE 36
Per cent distribution of households according to protein-calorie adequacy (rural)–1980

	P –	C –	P –	C +	P +	C –	P +	C +	P –	C –
Kerala	31.6		4.3		17.1		47.0		35.9	48.7
Tamil Nadu	29.7		0.8		18.3		51.2		30.5	48.0
Karnataka	5.6		0.0		7.1		87.3		5.6	12.7
Andhra Pradesh	22.2		0.0		15.4		62.4		22.2	37.6
Gujarat	12.8		0.0		31.4		55.8		12.8	44.2
Orissa	28.6		0.4		12.5		58.3		29.0	41.1
West Bengal	14.3		0.8		14.3		70.6		15.1	28.6
Uttar Pradesh	3.2		0.0		49.0		47.8		3.2	52.2
Average	18.5		0.8		20.6		60.1		19.3	39.1

P – C Protein and Calorie inadequate; P + C Protein adequate and Calorie inadequate

P + C Protein and Calorie adequate; P – C Protein inadequate and Calorie adequate

Source: National Nutrition Monitoring Bureau, 1980. National Institute of Nutrition.

The data revealed that nearly 60 per cent of the rural households consumed adequate levels of proteins and calories, while in 18 per cent they were inadequate. In another 21 per cent of households calorie intake was inadequate but not protein. Only 0.8 per cent households had calorie adequacy but protein inadequacy. A total of 39 per cent households had calorie inadequacy.

In urban slums the situation was worse with 25 per cent of households meeting neither calorie nor protein requirements, another 29 per cent meeting protein requirements but not calories, resulting in over 54 per cent of households being inadequate in calorie consumption. This deficiency is despite the relaxed norms of adequacy (mean—2SE level) adopted since 1976.

Surveys by the National Institute of Nutrition in the past two decades indicate that the energy intakes of rural low income group children are grossly inadequate—30 per cent below the recommended levels. Indeed less than 15 per cent of children below five years could be considered as having adequate nutrition. About 85 per cent suffer from varying degrees of malnutrition.

Data on prevalence of malnutrition among children are available from micro studies of nutritional assessment from household surveys conducted as a part of larger projects such as the India Population Project, Karnataka and the Bidar Integrated Rural Development Project

pregnant women in last trimester and lactating women. Nutrition surveys including clinical examination of nutritional deficiency signs, nutritional anthropometry, haemoglobin testing, diet survey and vital statistics were conducted. The survey noted considerable growth retardation among children of pre-school age. About 60 per cent of them were suffering from either moderate or severe degree of malnutrition. About 1.4 per cent of pre-school children had severe forms of protein-energy malnutrition (PEM). The diets were deficient in most nutrients, particularly in respect of calories, protein and vitamin A.

Data of the Bidar integrated rural development project covering a total population of 11,705 indicated that while 51 per cent of the pre-school children had weights below 75 per cent of the well-to-do Indians, only 10 per cent of them had normal weights. About seven per cent of the children had severe malnutrition. Deficiencies of vitamins A and B complex was observed in about five per cent, severe form of protein-energy malnutrition or marasmus was noted in 1.3 per cent of the children.

3 Micro-nutrient deficiencies

Aggravating the deficiencies in calorie, protein and energy intake are major deficiencies of micro-nutrients like vitamin A, iron, B group of

vitamins and iodine. These manifest slowly but have severe, handicapping consequences for the growing children. Assessments of general malnutrition (often done by using calorie intake as a yardstick to measure poverty) do not reflect micro-nutrient deficiencies. There is an overlap between calorie deficiency and other nutrient deficiencies because these deficiencies are attributes of the same poverty syndrome, but the severity of all these different deficiencies need not run parallel. For example several millions in the country are suffering from serious iodine deficiency which is not related to the caloric level of the diet.

Apart from the familiar conceptual inadequacy in nutritional assessments, there is a serious problem posed by computational errors in estimating household calorie intakes. Insufficient community cooperation during the survey and seasonal variations in dietary intake, for example, aggravate difficulties in proper estimation. Also, most diet surveys assessing overall household consumption, do not reflect intake of women and children. Intra-familial distribution of food especially among the poorest families disfavour children while the overall calorie intake of households are seemingly adequate. For children the predominantly cereal based diets are often insufficient.

A recent study at the National Institute of Nutrition shows that against a calorie coefficient of 0.5 for children between 1–3 years, the actual intake was only 0.33. For children in the group 4–6 years the actual intake was only 0.47, as against the coefficient of 0.62.

Household diet survey data fail to bring out the age and sex distribution of calorie inadequacy. The theory that the body can “adapt requirement to intake” and that people permanently obliged to subsist on low calorie intake can permanently adapt their requirement to this low intake without

functional impairment has been seriously refuted.

Iron

Studies conducted by the National Institute of Nutrition have shown that 63 per cent of India's children below three years and 45 per cent between three to five years suffer from iron-deficiency anaemia—moderate or severe in 10 to 15 per cent cases. The Bidar integrated rural development study estimated that more than 90 per cent of pre-school children suffered from anaemia (haemoglobin less than 11 G/d l) and 13.4 per cent from severe anaemia with haemoglobin less than 7 G/d l. The India Population Project's nutrition survey in selected villages of Karnataka estimated that 67 per cent of pre-school children had anaemia and had diets deficient in most nutrients: calories, proteins and vitamin A. Recent findings regarding the effects of iron deficiency on brain chemistry and functions indicate that iron deficiency has much wider implications beyond anaemia.

Investigations conducted by the Food and Nutrition Department, University of Baroda have tried to evaluate the effect of deworming, combined with iron folate supplementation, on nutritional status of children. In a series of studies on intervention strategies to combat anaemia in school, balwadi and slum settings, they found 60 to 94 per cent prevalence of nutritional anaemia and 35 to 58 per cent of parasite infestation. Worm infested slum children had significantly lower haemoglobin values than the uninfested. The combined effect of the iron-folic and anti-helminthic therapy was more beneficial while mere iron-folic acid supplementation failed to raise haemoglobin levels. At a cost of Rs 13.40 per child per year the combined administration of vitamin A, iron-folic acid and anti-helminthics helped reduce both anaemia and vitamin A deficiency.

TABLE 37
Intake per day of calories (Kcal) and iron (mg) in different physiological groups

Physiological groups (age in years)	Calories (Kcal)	Iron (mg)	RDA (mg/day)
1–3 yrs (B+G)	814	11.0	
4–7 yrs (B+G)	1,110	15.8	20–25
Adult males:			
Moderate	2,210	32.2	24
Adult females:			
Moderate	1,858	28.1	32
Pregnant	1,757	24.3	40
Lactating (moderate)	1,924	29.6	32

B = Boys; G = Girls

Source: Rao, B.N., Development of salt fortification programme to prevent iron deficiency in India, National Institute of Nutrition, 1984.

It is estimated that nearly 120 million children will be at primary schools by 1985. Considering that the mid-day meal programme cannot by then reach more than 20 million, intervention strategies could be conceived through school health programmes to reduce incidence of nutritional anaemia and vitamin A deficiency. The study concluded 'the primary school is an excellent infrastructure where in a package of prophylactic, iron-folic, vitamin A and anti-parasites can be easily delivered'.

The results of a recent survey of National Institute of Nutrition on prevalence of anaemia in rural India indicated that the major cause of iron deficiency anaemia is inadequate intake or poor absorption of iron from predominantly cereal-based diets.

A recent study noted that the estimated intake of dietary iron by different groups is far below the recommended allowance. Of this already inadequate intake, nearly 25 per cent is not absorbed. Frequent episodes of infection and hookworm infestation further aggravate iron deficiency, especially in pre-school children and rural populations.

Two approaches to control the problem of iron deficiency have been suggested. One approach is physiological, to improve iron absorption from habitual diets by enhancing their quality, which is a relatively expensive approach. The other is to fortify a suitable food item with iron. Salt has been suggested as an ideal vehicle for iron fortification which would satisfy the four major criteria: (i) it is consumed by the majority of the population, (ii) it is consumed daily within narrow limits, (iii) it is produced in controlled conditions at a few centres, and (iv) it remains stable during storage and distribution.

The second approach consists of community field trials which have been conducted: (i) a pilot community study among children in a residential school; and (ii) a large scale multicentric field trial among rural population in different regions of the country and at an urban centre. The first study conducted among children aged 5–15 years in a residential school, revealed that at the end of one year the mean haemoglobin levels of children receiving fortified salt had significantly increased as compared to the control group; and anaemia prevalence decreased in the experimental group.

In the second study, rural populations were tested in Hyderabad and Calcutta and an urban sample in Madras, each covering a population of 5,000–6,000. Half of them were supplied with iron fortified salt; and the other half used unfortified salt. In children one to five years, percentage prevalence of anaemia before and after intervention registered a significant decline from 96.3 per cent to 38.8 per cent at the Calcutta centre; from

66.3 per cent to 28.2 per cent at Hyderabad; and from 19.1 per cent to 9.1 per cent at Madras.

The studies provided insights on problems of manufacture, packing, maintenance and transport of iron fortified salt and gave positive results on community acceptability of iron fortified salt. Accepting the recommendations of the study, the Ministry of Food and Agriculture, has constituted a working group to examine the various aspects of manufacture, standardization and quality control, production and marketing of iron fortified salts and to advise the government. Positive steps are expected.

Vitamin A

Nutritional blindness caused by vitamin A deficiency has assumed serious proportions. According to estimates of the government nearly 30,000 children are becoming blind each year due to keratomalacia or vitamin A deficiency. This could be an under-estimate as it is based on hospital statistics and less than 15 per cent of the country's population have access to hospitals. The recent report of the National Nutrition Monitoring Bureau found a steady worsening of vitamin A deficiency of all forms from infants to 5–12 year olds. Among infants for the eight states studied, Tamil Nadu, Karnataka and Andhra Pradesh showed 1.4 to 1.5 per cent prevalence; and the other states none. In pre-school children the percentage ranged from none in Kerala to 8.6 per cent in Andhra Pradesh, 7.2 per cent in Karnataka and Orissa, 2.9 per cent in West Bengal. The percentage increase is sharp for the 5–12 year old boys—20.5 per cent in Gujarat, 17.4 per cent in Karnataka and Andhra Pradesh, 15.1 per cent in Orissa, 9.6 per cent in West Bengal and 5.5 per cent in Uttar Pradesh. While the ranking of states is somewhat similar for 5–12 year old girls the percentage prevalence is slightly less—with 15.7 per cent for Gujarat and 11.2 to 11.5 per cent for Karnataka, Andhra Pradesh and West Bengal and 4.2 per cent for Uttar Pradesh. Another estimate states that xerophthalmia damages the sight of 40,000 Indian children under five every year. A 1978 report (Shah) estimated that of the 92 million Indian children below 6 years, 7.4 million have symptoms of vitamin A deficiency. Amongst those whose malnutrition worsens to the point of severe corneal involvement he estimated that 60 per cent die and of those who survive, each year, 42,000 become totally blind and another 78,000 are partially stricken.

The most rational approach to the control of vitamin A deficiency is to ensure that diets provide adequate amounts of the vitamin. This could be achieved by the use of locally grown,

inexpensive vegetables, especially green leafy vegetables, which are good sources of carotene. High risk groups have, of course, to be administered vitamin A through health centres.

A community-based strategy would be to ensure that the hepatic stores of vitamin A be built up periodically (since the liver can store large quantities of vitamin A and release them periodically) through an oral administration of 200,000 IU of vitamin A dissolved in oil to children aged one to five years, once in six months. The Government of India accepted this recommendation made as a result of extensive research by National Institute of Nutrition and a programme was started in 1971. Initially restricted to areas of high prevalence, the programme reached 1.6 million children in seven states. The coverage progressively increased by 1979 to 25 million children in all the states and union territories.

Vitamin A is supplied by the Department of Family Welfare, Government of India, to the states and is distributed through primary health centres and sub-centres. Auxiliary nurse midwives (ANMs) and other paramedical workers distribute the vitamin in the form of flavoured syrup once in six months to children of one to five years during their home visits and maintain record of the distribution. An interim evaluation carried out in the states of Kerala and Karnataka after two years' implementation of the programme showed that the coverage was over 75 per cent of the expected number of children. A 75 per cent reduction in the prevalence of conjunctival signs of vitamin A deficiency was achieved. The evaluation also confirmed the administrative feasibility of this approach within the existing health infrastructure.

A more comprehensive evaluation was undertaken by the National Institute of Nutrition in the states of Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, Orissa, Rajasthan and West Bengal. The study used prevalence of Bitot's spots as an objective sign of vitamin A deficiency in children, which increases linearly with age. With vitamin A administration this age trend becomes less discernible. This evaluation covering over 70,000 children in 58 sub-centres reported the following main findings:

- (i) a low coverage of only 50 per cent;
- (ii) inadequate records of both supplies and distribution of vitamin A;
- (iii) reasons for poor coverage were irregular and short supply of the vitamin, lack of preparedness of the community, lack of supervision, exclusive reliance on a clinic approach rather than the recommended extension approach and disturbed work schedule of the auxiliary nurse midwife

due to family planning work. The evaluation report concludes: "This programme was conceived as a short-term measure to reduce the quantum of nutritional blindness until such time that the most rational and permanent solution takes over—improving the intake of vitamin A through the habitual diet. Unless the short-term measure is coupled with concurrent energetic action to promote the long-term measure, interim measures will continue indefinitely—a most undesirable situation."

The suggested long-term measure has been tested by the Nutritional Rehabilitation Centre at Madurai attached to the Rajaji Hospital. The strategy consists of a combination of nutritional rehabilitation (use of green leafy vegetables, brown vegetables and yellow fruits rich in vitamin A), education of mothers who will work closely with the balsevika to monitor the therapy on the child and a consequent change in food habits of the family. The lessons learnt by this programme could be implemented on a larger scale starting with those states having high levels of vitamin A deficiency in children.

The National Programme for Control of Blindness initiated in 1976 aims at reduction in incidence of blindness from 1.4 per cent (in 1982–83) to 0.3 per cent by 1999. There is a substantial financial support from bilateral aid agencies for this programme. It is estimated that there are nine million cases of blindness in the country and another 45 million suffering from visual impairment. Cataract constitutes 55 per cent of cases of blindness, which is curable through surgical intervention. Ophthalmic cure facilities have been strengthened in 540 primary health centres, 250 district hospitals and 30 medical colleges. Non-government agencies have played a significant role in organizing mobile eye camps for which government extends financial support. Shortage of trained doctors and ophthalmic assistants, slow installation and use of equipment and facilities and poor use of mobile units are among the problems identified.

Iodine

Iodine deficiency disorders can no longer be dismissed as a cosmetic problem. Some 40 million people in India (especially in the sub-Himalayan belt) have been seriously affected, despite the National Goitre Control Programme started 20 years ago. Earlier estimates indicated that 120 million (over a fifth of the population) were exposed to endemic goitre. However, a revised estimate is 170 million following the identification of new endemic areas. This figure is expected to go up to 200 million by 2000 A.D.



The far-reaching functional implications of the disease are of greater concern than the sheer numbers involved. Recent studies from the All India Institute of Medical Sciences based on nearly 12,000 blood cord samples obtained from endemic goitre areas showed evidence of thyroid hormonal deficiency in 4 per cent of newborns. Apparently only 5 per cent of the endemic area is covered by the salt iodization programme. Studies have shown a lag in mental development of children of mothers with goitre, although these children were not suffering from clinical cretinism (a state of defective mental development with physical deformity and arrested growth). They have also revealed widespread ignorance and indifferent or uncomprehending attitude of authorities towards the disease and the gravity of its various consequences.

The endemic goitre belt stretches over the entire sub-Himalayan region and includes the states of Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Bihar, Uttar Pradesh, West Bengal, Sikkim, Assam, Mizoram, Meghalaya, Tripura, Manipur, Nagaland and Arunachal Pradesh. The disease has also been identified in other locations like the Aurangabad district of Maharashtra, the Shahdol and Siddhi districts of Madhya Pradesh and the Nilgiri hills in Tamil Nadu. The prevalence of goitre is estimated to range between three and 60 per cent. Out of the 20 districts in Uttar Pradesh investigated, 16 were found to be severely endemic (where 30 to 70 per cent of people have goitre) of them only nine districts had half-hearted control programmes. Reliable statistics were not available on the impact of the programmes. Prevalence of goitre was high among children—60.8 per cent in six to 17 age group school children in Simla; and 12 to 15 per cent children in Pahalgam in Kashmir. These instances are illustrative of the widespread problem and the administrative apathy to tackle it on an urgent basis.

This gap between availability of technology and its application in a field programme is typical. Salt iodination is a simple, inexpensive intervention known for years. As of 1983, there are only 14 plants in the country, to produce iodinated salt. This number is too small to reach the estimated 170 million people exposed to the risk. According to the present conservative assessment of demand, the annual requirement of iodinated salt is 700,000 tonnes, against an annual production of a seventh of it.

The major problems hampering wider use of iodinated salt are: (i) failure to control the inflow into the endemic areas of non-iodinated salt in addition to iodinated salt; (ii) existing plants working far below (almost half) their installed capacity; (iii) poor maintenance of existing plants;

(iv) lack of education of women to use the salt (which should not be washed if the iodine content is to be preserved); (v) grossly inadequate production of iodinated salt as compared to the amount required; and (vi) lack of awareness at all levels of the need and urgency for action.

Among the recommended measures are (i) intensive education programmes beamed on the public of the endemic states, (ii) focus on iodine deficiency disorders in the training of auxiliary health personnel, and the anganwadi workers in ICDS programmes; (iii) ensuring the use of iodinated salt by the people and also in the feeding of children and mothers attending anganwadis in the ICDS programme; (iv) education of families in the use of iodinated salt, and (v) helping health agencies in monitoring the use of iodinated salt.

4 Infant feeding practices

Breast Feeding

In traditional societies breastfeeding of babies is continued as long as the mother's milk is not exhausted either in the natural biological course or consequent on another pregnancy. Evidence from anthropological studies indicate that breastfeeding had continued till the age of two and a half years in as many as 52 societies. Today, the duration of breastfeeding, timing of the introduction of supplementary foods and the extent of reliance on foods other than human milk vary greatly between communities.

Although it is hard to generalize for a country as large and diverse as India, it is estimated that breastfeeding is near universal in rural areas by custom and tradition, a practice that is undergoing change due to urbanization, migration and increasing numbers of women working outside the home. Since 1920, breastfeeding has been on the decline in the urban and industrial areas. This decline in the proportion of mothers who breastfeed, as well as a shortening of the duration to less than three months represents unacceptably premature weaning.

There is a broad tradition in India of prelacteal feeds with honey or some form of sucrose. It varies from state to state as is clear from Table 38.

This picture also reveals the harmful practice of discarding colostrum which is invaluable in building immunity in the newborn. The contrary belief that colostrum is harmful to the infant seems to be held both by mothers as well as among the health profession, as several studies indicate.

Newborn diarrhoea is essentially a "colostrum deficiency" syndrome, while infantile diarrhoea (especially in 6 to 9 month old babies) is more

TABLE 38
Prelacteal feeds in India

Region	Duration	Prelacteal feeding
South India	Soon after birth First 3 days	Honey Sugar water or donkey's milk
West Bengal	Soon after birth First 3 days	Honey Sugar water
Assam and Khasi Hills	Soon after birth	None Breastfeeding soon after birth
Uttar Pradesh	Soon after birth First 3 days	Honey Goat's milk
Maharashtra	Soon after birth First 3 days	Honey Various decoctions
Punjab	Soon after birth First 3 days	Honey Diluted boiled cow's milk

Source: Chandrasekhar, S., Infant Mortality, Population Growth and Family Planning in India, 1972.

common in bottlefed babies. It is therefore important for the health, development and survival of infants that breastfeeding be protected and encouraged and weaning foods introduced at the appropriate age. The child moves through a critical passage of survival threat from malnutrition from 6 months to 18 months when weaning has begun but the supplementation remains inadequate. Deaths during the period of weaning in developing countries are 15 times higher than in industrialized countries.

Breastfeeding has several advantages—it builds immune bodies in the child offering protection against infection, it is economical, it helps prevent the possible contamination in bottle feeding, it helps to protect (if the child sucks with the necessary frequency, intensity and duration) the women from an unwanted pregnancy, it helps the contraction of the womb after delivery, it promotes a vital psychological bonding between the mother and the baby, and, of course, there is no known food better for the infant than the mother's milk.

Several studies indicate the scope for greater involvement of medical and paramedical personnel in promoting breastfeeding when the mother is in the hospital. Thus hospital practices, including lack of rooming-in facilities, prescription of artificial milk formula and lack of keenness of the health profession affect breastfeeding practices. Properly used, the hospital could provide a useful support to initiate breastfeeding. A recent study on hospital staff's awareness of improved feeding practices indicates that in 54 per cent of

the cases the baby is kept in the same bed with the mother, doctors and nurses prescribed drugs and hormones that could have the effect of suppressing the milk output, that most recommend breastfeeding to commence 3–10 hours after delivery. While conceding that breast milk is best, doctors and nurses do prescribe animal milk or powdered milk. Though nurses do tell mothers about sterilizing bottles and nipples before feeding the baby, they hardly had the time or anxiety to ensure that this was done. Only 54 per cent doctors and 30 per cent nurses were aware of the 1981 International Code of Marketing of Breastmilk Substitutes.

Two studies in slums reported that in 75 to 80 per cent cases breastfeeding started two to seven days after birth.

An analysis of several Indian studies on breastfeeding practices suggests the following:

- Nearly 90 per cent of the population covered by the surveys started breastfeeding later than necessary—on the second or third day after birth.
- While educated mothers were more aware of the needed frequency and duration of breastfeeding, illiterate mothers did not adhere to any specific time schedule for breastfeeding.
- Colostrum was considered unnecessary or harmful even by health personnel, as is seen from a study of 200 medical graduates, 50 interns and 14 licentiates, all in allopathic medicine. Mothers too consi-

dered it harmful.

- Personal hygiene, like washing of nipples and use of clean garments, was seldom observed by mothers.
- Weight gain was maximum for breast-fed infants upto six months, as compared with artificially fed infants.
- The working status of urban mothers in the higher economic strata adversely affected breastfeeding. In comparison poor urban working women breast-fed their babies longer. In rural areas the working status of the mother made little difference as she carried the infant to the work place.
- Age and educational level of mothers was inversely related to breastfeeding.
- Feeding bottles were inadequately cleaned. In one survey 50 per cent of the mothers were seen to clean bottles only once a day.

These studies have also shown that artificially fed infants were three times more susceptible to diarrhoeal infections, and two times more likely to contract respiratory infections, than infants who are breast-fed.

The promotion of breastfeeding has to continue to press forward in a number of directions:

- The adoption in December 1983 by the government of a national code of marketing of breast milk substitutes, on the lines of the international code approved by the World Health Assembly in 1981, needs to be translated into enforceable legislation to protect and promote breastfeeding against inroads of commercial milk substitutes. This has to be complemented by administrative mechanisms, reporting systems and corrective procedures.
- A continuous campaign is necessary to inform and educate mothers and families on the value of breastfeeding and proper weaning. This responsibility falls as much on professional and voluntary organizations as on the departments of government.
- A substantial revision of teaching and training curricula is overdue in all educational institutions starting with the primary school and nonformal systems of learning for children and adults, going on to tertiary education of all development workers like nutritionists, doctors, health workers, teachers, social workers and government planners and executives.
- There is the neglected or underestimated requirement of maternal nutrition which

underpins the ability of the mother not only to give birth to healthy infants and provide breastmilk and child care, but also to safeguard her own physical health and economic productivity. And, maternal nutrition must begin long before pregnancy, from female childhood and start at home with the family pot.

- Closely related to improved infant feeding and maternal nutrition is the need of education and social status for women and a consequent lightening of the burden of frequent pregnancy, excessive domestic work and strenuous employment conditions.
- Also, the entire health system has to be so influenced that health planning, hospital practices and professional care of mother and child are uncompromisingly supportive of breastfeeding.

5 Weaning: concept and practice

A contributing factor to infant malnutrition is prolonged breastfeeding without appropriate and timely introduction of *complementary* feeding. Weaning can be defined as a systematic process of introduction of suitable food at the right time in addition to the mother's milk to provide needed nutrients to the infant. Too early an introduction of weaning foods involves the risk of infection and adverse effect on lactation. Too late an introduction would be harmful to the infant's growth and development arising from insufficient quantity of breast milk.

Another issue in weaning relates to the nature and quantity of supplementation. A number of factors are involved: for example, nutrient value, ease in cooking, hygienic preparation, digestibility, density, caloric value, availability, frequency of feed, proper consistency, and cultural acceptability.

A WHO study of weaning practices by rural mothers in India showed that by 6–7 months only 12 per cent of the mothers gave complementary feeds. Many of them started weaning foods at one year or later, resulting in protein energy malnutrition of the child.

While exclusive breastfeeding in the first six months may be appropriate in the case of well-nourished mothers, it may be necessary to start the baby on weaning foods after four months in cases where breastmilk is less than the baby's requirement.

A national workshop on weaning foods held in mid-1983 came up with several recommendations which have broad government endorsement. Among them are the following:

- Complementary food, given preferably between breastfeeding, should be such as that it can be easily prepared.
- The regular family diet should be adapted to suit the needs of the infants, through suitable adaption techniques to be developed and disseminated among the community.
- Production of ready-to-eat and ready-to-mix food which could easily be reconstituted has to be encouraged.
- Flours prepared with a blend of partially malted and roasted grains and roasted pulses and fortified with vitamins and minerals should be made available through the public distribution system.
- Local people, especially women from the under-privileged sections, should be organized for production of suitable weaning foods. Plants must be established at district and block levels for large scale production of these foods using locally available resources.
- An adequate number of food processing plants should be set up for fully processed and semi-processed complementary foods in each state to meet the needs of the integrated child development services and similar child care programmes.

These steps deserve to be taken as soon as possible, side by side with a massive educational

campaign centred on the concept and practice of proper weaning.

6 Maternal malnutrition

The sex bias in nutrition *for* the male and *against* female infants, girls and women, has been exposed by several studies. Girls enter into marriage and motherhood from their pre-existing malnutrition and impair their health further. Cultural traditions of intra family distribution of food, rooted in rural areas, compel women to eat last and often eat least both in quantity and quality. While the low nutrient intake may help to maintain her own health and nutritional status, such as it may be, the demands on the body during pregnancy and lactation drastically deplete her already scarce reserves—leading to entrenched deficiencies and ill health.

In India, a woman's role extends beyond her maternal responsibilities, to playing a crucial part in the agricultural economy. Seasonal overemployment of women of landless labour families rise to over 60 per cent in the peak crop months. Despite such hard work a woman does not receive enough nutrition to replenish her energy reserves. The result is a cruel combination of overwork and undernutrition. Lean agricultural seasons bring with them unemployment, low or no income and minimal food consumption in the family.

The nutritional status during pregnancy and lactation seriously affects women of poor fami-

TABLE 39
FAO/WHO recommended requirements for an adult woman before and during pregnancy

Nutrients	Daily requirements	
	Before pregnancy	During pregnancy
Energy	2200 Kcal/9.2 mega J.	+ 160 kcal 1st trimester + 350 kcal 2nd & 3rd trimesters
Protein	29 g	+ 9 g
Vitamin A	750 µg retinol	—
Tiamine	0.9 mg	+ 0.1 mg
Riboflavin	1.3 mg	+ 0.2 mg
Niacin	14.5 mg	+ 2.3 mg
Folic acid	200 µg	+ 200 µg
Vitamin B	2.0 µg	+ 1.0 µg
Ascorbic acid	30 mg	+ 20 mg
Vitamin D	2.5 µg	+ 5.0 µg
Calcium	0.4–0.5 g	1.0–1.2 g
Iron	14–28 mg	—
Zinc	2.2 mg	+ 1.0 mg
Magnesium	200–300 mg	—
Copper	1.5 mg	—
Iodine	110 µg	—

Source: Kusum P. Shah, Assignment Children 55/56, UNICEF, 1981.

lies. Anaemia is itself the most common manifestation. It is estimated to affect up to 50 per cent of Indian women from the lower socio-economic groups in the latter part of pregnancy, with haemoglobin levels below 11 gms. About 10 per cent of all maternal deaths in India are attributed to anaemia.

During pregnancy the concentration of haemoglobin tends to be lower due to increase in plasma volume by about half, and that of circulating red cells by about a fifth. During lactation there is a constant loss of nutrients through the mother's milk, the essential composition of which does not change much in spite of nutritional stress; for, whatever is deficient in the diet is made up from the body stores of the mother—precipitating malnutrition.

The additional requirements of nutrients before and during pregnancy are reflected in the recommended levels (Table 39). These levels are well above the customary intake of mothers in most developing countries.

TABLE 40
Maternal dietary intake of poor women in urban Baroda, during pregnancy and lactation

Kcal	1500–1600
Protein (g)	35–40
Fat (g)	30
Calcium (mg)	400
Vitamin C (mg)	10–15
Vitamin A (μg)	125
Iron (mg)	20–25
Folate (mg)	0.5–0.7
Vitamin B ₁₂ (μg)	0.5
Thiamin (mg)	1.0–1.5
Riboflavin (mg)	0.5
Niacin (mg)	5–6

Source: Whitehead R.G. (Ed.) Maternal diet, breast feeding capacity, and lactational infertility, U.N. University, Toyko.

A study of poor women in India subsisting on a diet of less than 1800 kcal a day showed that nearly a third of the pregnancies were wasted in miscarriages and stillbirths. It is possible that the human being is able to function at different levels of nutritional intake. Though equilibrium may be established at various levels of food intake, this can be true only up to a point. And this point will vary from individual to individual.

The total energy requirement to meet increased demands during pregnancy has been estimated at about 80,000 calories. This means an average increment of 285 calories per day over the 280 days; or, more specifically 150 calories a day in the first trimester and 350 calories during the second and third trimesters.

The extra dietary energy required during lactation is less easy to establish. If the mother produces 850 ml of milk a day for six months, the total energy requirement to make that much milk is 135,000 kcal, (assuming that dietary energy is converted to milk energy at 90 per cent efficiency). A part of this extra requirement would come from energy stores already built up (if that be the case) during pregnancy and so the lactational need would be around 100,000 kcal or about 550 kcal per day.

If this norm is applied to rural women in India, (86 per cent of whom are engaged in agriculture with its heavy workload), the energy requirement would be 3,000 kcal per person per day plus 550 kcal during lactation.

In India, the *minimum* daily requirement for the *subsistence* level of nutrition has been calculated at 574 gms of cereals and pulses for a man (age 15+), 431 gms for a non-pregnant woman, 481 gms for a pregnant woman and 541 for a lactating mother. The daily per capita availability for the whole population has fluctuated around 400 gms of cereals and about 45 gms of pulses during the 1970s. These averages do not take into account the low purchasing power of about half the population and the intra-family skewness in food distribution operating against the female. In terms of energy, the average calorie intake per Indian per day is a little over 2000.

For a very young mother, the nutritional demands of motherhood will be more. For, a young woman who is still maturing will require energy for her own growth.

The effect of poverty on maternal malnutrition is clear: A calorie deficiency of 540 kcal per day can depress by as much as half the normal weight gain of 12 kg during pregnancy. Inadequate weight gain results not only in low birth weight but also in low fat stores unequal to the energy demands of breastfeeding.

There is substantial evidence in India, as elsewhere, to show that with a modest 150–250 kcal increase in daily intake, a statistically significant increase in birth weight could be achieved. Such supplementation is most effective in the third trimester of pregnancy. Studies have also shown that *calorie* deficiency plays a more critical role in intra-uterine growth retardation than *protein* deficiency.

7 Low birth weight

The nutritional wellbeing of the pregnant woman is the most decisive factor in preventing low birth weight. And the birth weight is the most decisive factor in the chances of infant survival. It is therefore inferred, and actually observed, that intervention to get more food to undernourished

pregnant women is the most cost-effective single point at which to break the prevailing cycle of malnutrition, poverty and ill health.

Low birth weight babies (that is below 2.5 kg) are three times more likely to die in infancy than babies of normal weight at birth. In India each year 7–10 million children are born with low birth weight; that is, at least a third of all children born.

In India, over a third of all deaths of children under five years occur in low birth weight infants. Of the entire population they contribute about 18 per cent of all deaths. Clearly infant mortality is unlikely to be lowered significantly unless birth weights can be increased.

In a recent field study (ICMR) covering 210,000 households in different regions of the country the incidence of low birth weight was found to be 30–40 per cent. The national aim is to reduce this proportion to 10 per cent over the next 15 years.

Only five per cent of Indian infants have a birth weight range of 3.5 to 4 kg. The average birth weight of an Indian infant is estimated at 2.7 kg. This level has not changed over the past 30 years, presumably because of the large, continuing proportion of people in poverty.

8 Supplementary feeding programmes

Since 1959, starting with the Applied Nutrition Programme (ANP) jointly sponsored by the government, UNICEF, WHO and FAO, there have been several programmes of supplementary feeding of children of pre-school age and pregnant and lactating women. The ANP stressed the production and consumption of protective and supplementary foods by village communities. The mid-day meal programme in schools launched in 1962 was an effort to simultaneously increase school enrolment and improve child nutrition. Hardly 10 per cent of the target population has been covered by this programme. Resultant improvement in the nutritional status of beneficiaries has been minimal, due to reasons like the sharing of food, worm infestation, deprivation of home food to children and pilferage.

Of late several states like Tamil Nadu and Andhra Pradesh have strengthened and expanded school feeding programmes, the recurring expenditure being a direct charge on the exchequer. An initial evaluation of the statewide coverage of children between two and ten years in Tamil Nadu shows some positive results: like weight gain particularly for the younger children, an improvement in the clinical picture, nutritional knowledge and school enrolment. It also shows the need for strengthening physical facilities, cost control, community involvement and a system of built-in evaluation. In Kerala school feeding programmes have been widely established, contribut-

ing to a high rate of attendance at school. Programmes for distribution of fortified foods (e.g. "Modern bread," Miltone and Balahaar) for vulnerable groups were initiated in 1968, with UNICEF assistance. The Special Nutrition Programme (SNP) launched in 1970–71 was meant to provide supplementary nutrition to millions of children below 6 years and expectant and nursing mothers living in urban slums, tribal areas and backward rural areas. The SNP aimed at bridging the existing nutritional gap by providing 300 calories and 10–12 grams protein for children and 500 calories and 20–25 grams of protein for mothers for 300 days in a year.

The Integrated Child Development Services (ICDS) was started in 1975–76 on an experimental basis in 33 project areas. This expanded to cover 300 blocks in 1981, consequent on an evaluation conducted by the Planning Commission in 1977. Some 1,000 blocks (or a fifth of all development blocks) are to be covered by 1985. By that year ICDS is expected to provide (i) immunization and health check up to 10 million children; (ii) supplementary nutrition to 6.1 million children and 1.1 million pregnant and lactating women; (iii) non-formal means of pre-school learning to three million children. This coverage is likely to treble during the Seventh Five Year Plan, 1985–1990.

The coverage of beneficiaries in the Sixth Plan is as follows:

TABLE 41
Supplementary feeding programmes

Year	Special nutrition programme		Mid-day meals programme
	Total	ICDS components	(Beneficiaries in millions)
1979	6.71	0.27	15.10
1980	6.91	0.59	17.40
1981	7.98	0.87	17.40
1982	8.00	1.00	13.79
1983	9.00	2.20	17.98

It is planned to integrate health and education components into the SNP feeding programmes and also merge the existing SNP centres into upcoming ICDS projects. Efforts are also being made to enrich the mid-day meals programme with the essential services of health, sanitation and water supply.

A recent evaluation of the ICDS programme indicates that the maintenance of 1,000 projects absorbs 0.13 percent of India's gross domestic product. In other words, all areas in India could have these services at a total administrative cost of about 0.65 per cent of the GDP.

A follow-up survey conducted in 15 of the original 33 projects indicates that the incidence of severe malnutrition among children 0–6 years fell from 21.9 per cent to 5.4 per cent and the incidence of moderate malnutrition from 23.3 per cent to 17.2 per cent over a 21-month period. The most dramatic reduction occurred in children less than three years old, with the incidence of severe malnutrition falling from 29.2 per cent to 6 percent.

A study was conducted by the All India Institute of Medical Sciences in 1983 in 406 anganwadis selected from 15 states. The status of some 4,292 children suffering from severe protein calorie malnutrition was monitored over a period of 6 to 12 weeks. The treatment included therapeutic supplementary nutrition and simple drug therapy for the illnesses associated with malnutrition, and was managed entirely at the village level by the anganwadi worker with the assistance of the auxiliary nurse midwife (ANM). Of the children receiving treatment, 85 percent improved; there was no change in the nutritional status of 6.3 per cent; 3.6 per cent deteriorated; and 3 per cent died. Given the 15 per cent mortality rate reported for severe protein calorie malnutrition at hospitals, the value of village level

management of malnourished children is clear.

There are many other examples of supplementary feeding programmes by voluntary agencies as well as governments. For example, the Tamil Nadu Nutrition Project, supported by the World Bank, in several districts of the states focuses primarily on nutrition through supplemental feeding of preschool children, particularly those between 6 and 18 months of age, and pregnant and lactating women. The project has an education-communication component, as also simple interventions for health care and linkages with hygiene, water and sanitation. The services are delivered through community nutrition centres with the support of health centres. The profile of the target population is refined and monitoring and evaluation are emphasized, in terms of the delivery and use of inputs, adoption of recommended behaviour, changes in the nutritional and health status and the impact on mortality rates.

There are other type of supplementary feeding programmes run by voluntary agencies or by governments—to complement the school feeding programmes, multipurpose programmes like ICDS and the public distribution system for food at subsidized or controlled prices.

TABLE 42

Provisional estimates of infant mortality rates (IMR) in ICDS areas in 1982–83 (per thousand)

Location	Provisional estimates based on the study in ICDS Projects*	National estimates provided by SRS** (1978 Estimates)
Rural and Tribal Areas	89.6	137
Urban Slum Areas	71.6	74
Combine (Rural, Tribal & Urban Slum Areas)	83.3	127

*The provisional estimates are based on a sample of 218 anganwadis selected from 36 projects (15 Rural, 8 Tribal and 13 Urban Slum) covering a population of 0.22 million.

**Sample registration system, Registrar General, 1978.

Chapter V

Education

The situation in education is discussed here in the context of the two major, inter-related objectives India has set for itself:

universal elementary education; and
eradiction of adult illiteracy.

Neither aim is new and the present goal is to achieve them by the end of the decade. This concern is central to the concept of development, as education is not only a basic need and human right but also a means of meeting other needs and for sustaining development itself.

1 Literacy

The progress achieved in literacy has been substantial but inadequate in relation to the size and growth of population. The percentage of literates to total population has improved from 16.67 in 1951 to 36.23 in 1981. If the estimated number of children below five years is excluded, the size of the illiterate population comes to around 340 million, larger than the population of any country outside China.

TABLE 43
Progress of literacy, 1901–1981—India
(Percentage of literates to total population)

Census Year	Persons	Males	Females
1901	5.35	9.83	0.69
1911	5.92	10.56	1.05
1921	7.16	12.21	1.81
1931	9.50	15.59	2.93
1941	16.10	24.90	7.30
1951	16.67	24.95	7.93
1961	24.02	34.44	12.95
1971	29.46	39.45	18.69
1981*	36.23	46.74	24.88

*Excludes Assam
Source: Census of India 1981.

While the literacy rate has slowly improved, the actual number of illiterates has been increasing due to the rising population and the backlog of adult illiteracy.

LITERACY RATE

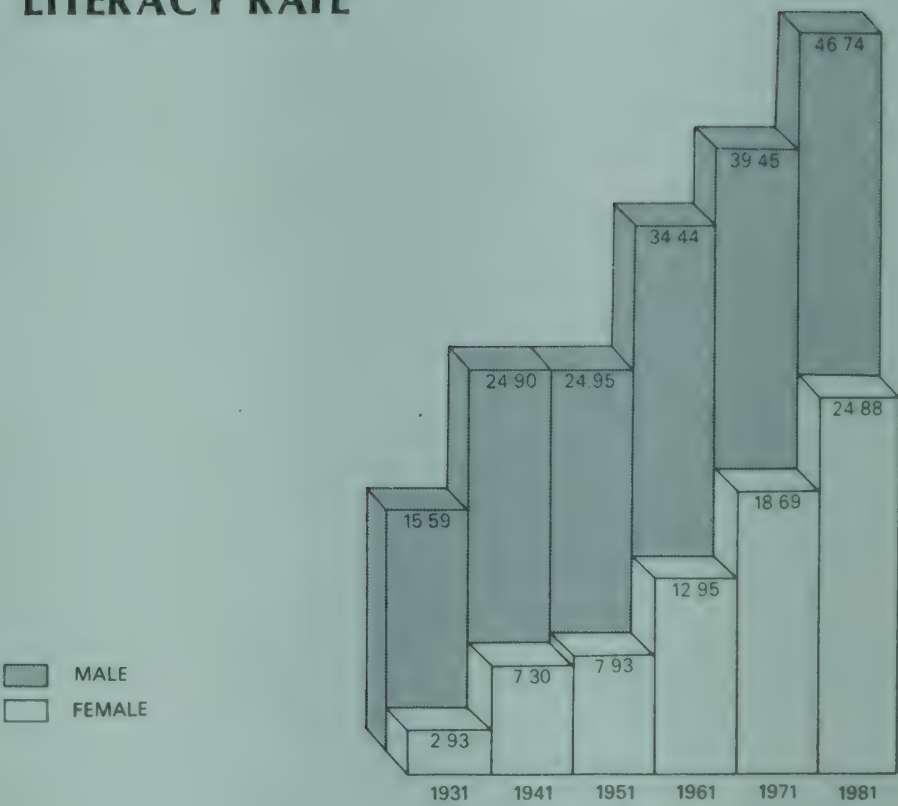


TABLE 44
Adult literacy rates 1981
(for major states in India, age 15 years and above)

States	Persons	Males	Females
INDIA	40.76	54.84	25.68
Andhra Pradesh	32.32	34.32	20.03
Bihar	29.34	44.85	13.17
Gujarat	48.32	62.76	33.16
Haryana	39.28	54.43	21.58
Karnataka	77.48	56.90	28.23
Kerala	78.14	85.98	70.79
Madhya Pradesh	32.27	47.63	15.88
Maharashtra	51.68	67.62	34.56
Orissa	38.85	55.98	21.16
Punjab	42.19	50.71	32.42
Rajasthan	28.24	43.01	12.03
Tamil Nadu	50.46	65.99	34.65
Uttar Pradesh	30.50	45.36	13.92
West Bengal	48.13	61.15	33.25

Source: Census of India 1981.

Adult literacy refers to persons aged 15 years and more. While the Indian share of the world's



population is around 15 per cent, its share of world's adult illiteracy has been estimated at 29.8 per cent as of 1980.

TABLE 45
Adult literacy
(age groups 15 plus, in million)

Year	Total adult population	Illiterate adults	Percentage illiterate
1951	215	173	80.70
1961	258	187	72.20
1971	317	209	65.80
1981	414	245	59.24

TABLE 46
Adult literacy rate

	1971			1981		
	Persons	Males	Females	Persons	Males	Females
Total	34.04	47.69	19.32	40.76	54.84	25.68
Rural	26.98	40.51	12.88	32.70	47.27	17.57
Urban	60.28	72.42	45.42	65.13	76.36	51.88

TABLE 47
Literacy rates—Scheduled Castes 1981

	Total	Male	Female
Total	21.38	31.12	10.93
Rural	18.48	27.91	8.45
Urban	36.60	47.54	24.34

Literacy rates—Scheduled Tribes 1981

	Total	Male	Female
Total	16.35	24.52	8.04
Rural	14.92	22.94	6.81
Urban	37.93	47.60	27.32

ADULT LITERACY
(In Age-group 15 plus)
(In millions)

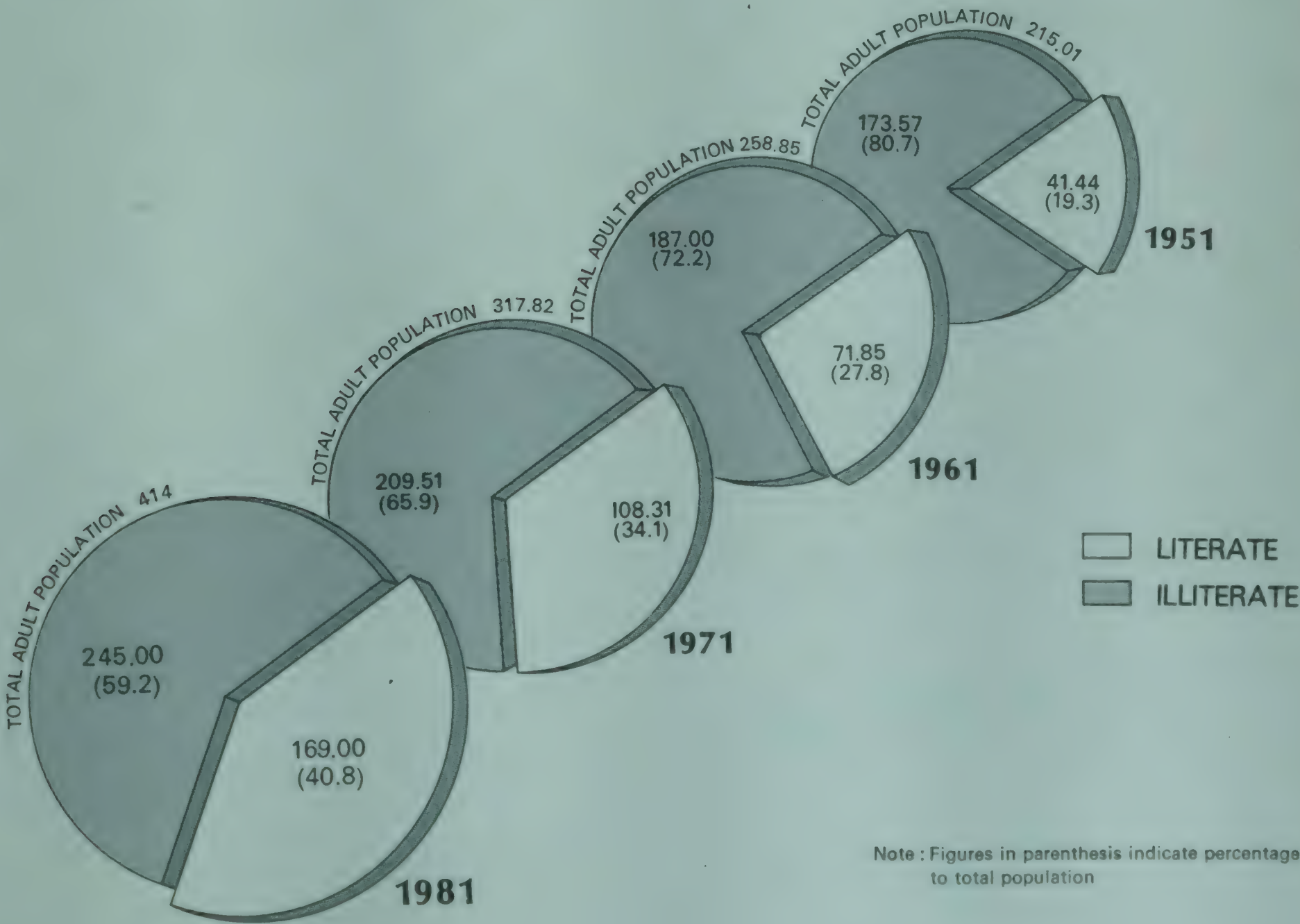


TABLE 48
Illiteracy: A comparison
(Number of illiterates aged 15 and above
[millions])

Country	1970	1980
India	208.1	243.1
Indonesia	30.3	29.2
Bangladesh	25.8	26.9
Pakistan	24.9	29.8
Nigeria	23.1	27.6
Brazil	18.4	18.1
Ethiopia	13.2	16.7
Egypt	11.0	11.7
Iran	10.9	11.1
Afghanistan	8.9	10.7
Sudan	7.3	9.1
Total	381.9	434.0
World total	742.2	814

Within the pace of progress India has made, the literacy rate varies widely between males and females; between urban areas and the rural interior; between scheduled castes and tribes on the one hand and the rest of the population on the other; and between state and state. These variations interlock. For example, the literacy for females has consistently been behind that for males, and by a big margin. And the female literacy rate in rural India, where three-fourths of the people live, has been around a third of the female literacy rate for the towns. Again, the proportion of illiterate females among scheduled castes and scheduled tribes is appreciably higher than for the rest of the national community.

The inter-state variation in literacy is wide. Kerala has the highest adult literacy at 78 per cent against Rajasthan's 28 per cent. This variation is even more sharply reflected in female literacy. Thus of every 100 adult women in Rajasthan as many as 88 are illiterate; in Kerala 29 are so. In Uttar Pradesh and Bihar, 87 women out of 100 cannot "with understanding both read and write a short simple sentence on their everyday life".

FEMALE LITERACY RATES

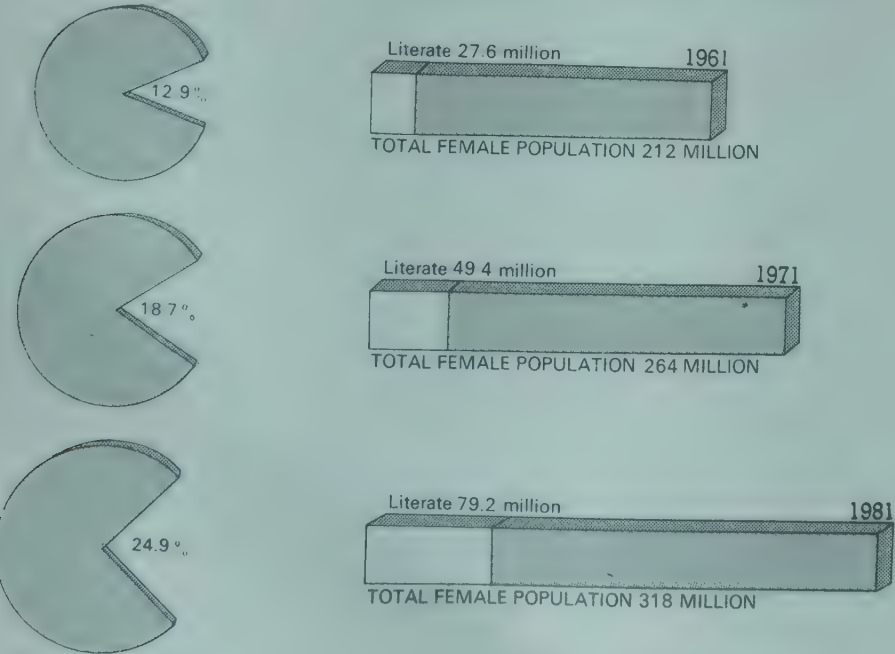


TABLE 49
States and union territories in order of
female literacy, 1981

States	Per cent female literate to total female population
<i>Female literacy 50 per cent and above</i>	
Kerala	64.48
Chandigarh	59.30
Mizoram	52.57
Delhi	52.56
<i>Female literacy 25-50 per cent</i>	
Goa, Daman and Diu	46.78
Pondicherry	44.30
Lakshadweep	44.21
Andaman and Nicobar Islands	41.85
Maharashtra	35.08
Punjab	34.14
Tamil Nadu	34.12
Nagaland	33.72
Gujarat	32.31
Tripura	31.60
Himachal Pradesh	31.39
Manipur	30.69
West Bengal	30.33
Meghalaya	29.28
Karnataka	27.83
<i>Female literacy less than 25 per cent</i>	
Haryana	22.23
Sikkim	22.07
Orissa	21.11
Andhra Pradesh	20.52
Dadra and Nagar Haveli	16.75
Madhya Pradesh	15.54
Uttar Pradesh	14.42
Bihar	13.58
Rajasthan	11.32
Arunachal Pradesh	11.02

Source: Census of India 1981.

As in the case of the absolute number of illiterates (which has been rising despite the improving literacy rates), the actual number of illiterate females is also increasing with time and faster than the number of male illiterates. More so in the backward states, in the rural areas and among scheduled castes and scheduled tribes.

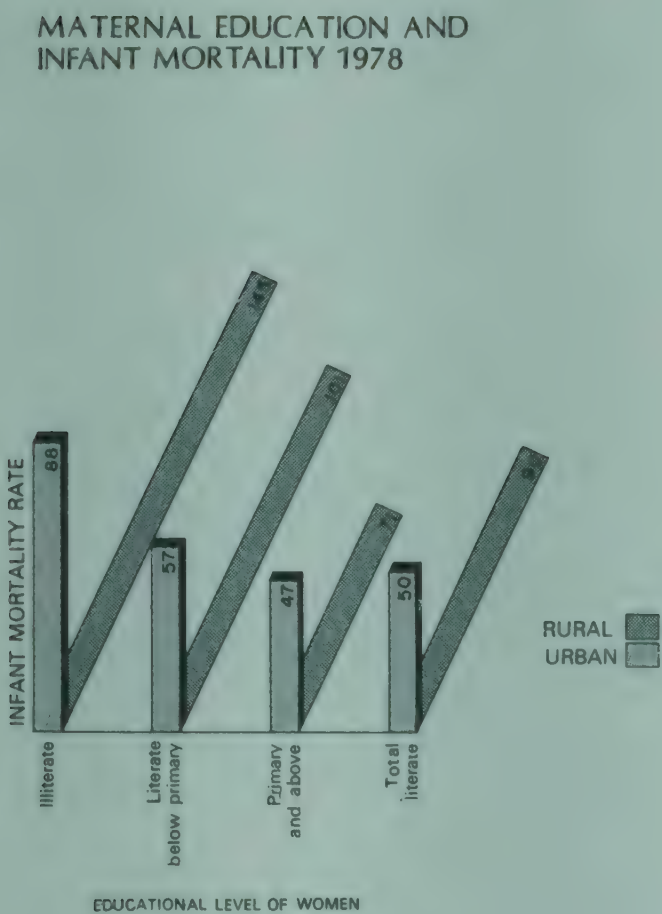
The correlation between female illiteracy and infant mortality is equally clear. It is found that infant mortality was highest in the case of illiterate mothers both in urban and rural areas but much higher in the latter. As education levels increased, the mortality rate declined.

The lack of education of women limits their awareness of the benefits of learning for their children. Unless the women are educated, the

TABLE 50
Infant mortality level by education of women, 1978

Educational level of women	Infant mortality rate	
	Rural	Urban
Illiterate	145	88
Literate but below primary	101	57
Primary and above	71	47
Total literate	90	50

Source: Survey on Infant and Child Mortality, 1979, Office of the Registrar General



effort to open up learning opportunities to boys and girls from poor families is unlikely to succeed decisively. In fact, the most potent tool to create a social demand for primary education of children is the exposure to education of adults, particularly women.

2 School education

In institutional terms the expansion in school education since India became independent, is phenomenal. India began at a low level of achievement in 1947, despite some expansion of primary education under the British rule in the previous 130 years. At that time only one child out of three in the age group 6–11 years and only one child out of 11 in the age group 11–14 years were enrolled in school. In 1981, the total

enrolment in primary grades (I–V) for children in the age group 6–11 was 83 per cent (73 million). The corresponding figure for grades VI–VIII (age group 11–14 years) was 40 per cent (19.8 million). Tables 51 and 52 show the pace of enrolment through three decades.

The expansion in enrolment is reflected in the increase in the number of primary schools. In 1950–51 there were 209,671 primary schools; in 1981–82 their number was 495,007, representing an increase of 136 per cent. The number of middle schools (classes VI–VIII) rose eight-fold over this period from 13,596 to 119,560. Ninety per cent of the primary schools and 83 per cent of the middle schools are in rural areas. Over 91 per cent of primary schools (or primary sections of composite schools) are in the public sector. Today a primary school is ‘available’ within walking distance of the home of over 90 per cent of the children; and a middle school is similarly available to about two thirds of the population.

About 80 per cent of the children are enrolled in schools generally between the ages of five and eight. And the 20 per cent who never go to school include mostly girls and children of the lowest of the social (mainly caste) and economic groups. While this may be a better record than that of many other developing nations in the contemporary situation, the task of enrolling additional children becomes exponentially difficult, as the enrolment rate rises.

Some of the difficulties with which India started in the field of primary education persist despite the relatively high enrolment ratio. For example, the literacy level and attendance ratio are low, the drop-out percentages as well as the rate of stagnation are high. These in turn have been traced to the deficiencies in the educational system, process and content—in terms of structural evolution, equality of opportunity, relevance of curricula and usefulness of instruction.

The enrolment figures show variations similar in pattern to those noticed in respect of adult literacy. For example, as much as a third of the girls in the age group 6–11 years have not been enrolled, despite the fact that over the past 30 years and more the enrolment of girls has increased by over five times, compared to the three-fold increase in the case of boys. Thus the faster growth rate in girls’ enrolment in relation to that of boys is explained partly by the lower base from where a small increase appears impressive in percentage terms and partly due to some priority having been given in recent years to girls education.

A comparison of the enrolment level achieved in different states indicates the enormity of the task to be accomplished by the relatively backward states. In Rajasthan, for instance, 70 per

TABLE 51
Enrolment in classes I-V (1950-51 to 1981-82)

Year	Enrolment (in millions)			Percentage of children enrolled in Classes I-V to total population in the age group 6-11		
	Boys	Girls	Total	Boys	Girls	Total
1950-51	13.770	5.385	19.155	60.8	24.9	42.6
1960-61	23.593	11.401	34.994	82.6	41.4	62.4
1970-71	35.739	21.306	57.045	92.6	59.1	76.4
1980-81 (P)	44.576	28.112	72.688	99.0	66.2	83.1
1981-82 (P)	44.976	28.587	73.563	99.4	66.9	83.7

(P) Provisional

Source: Ministry of Education

cent of the girls in the age group 6-11 years are not yet at school; and of the age group 11-14 years, 89 per cent of the girls have not been enrolled.

The inter-state disparity is reflected in the availability of primary schooling facility in the neighbourhood. The proportion of rural population with such facility varied from 28 per cent in Himachal Pradesh to 98 per cent in Nagaland.

While the enrolment of boys and girls from the scheduled castes and tribes is low as a proportion of total enrolment, that of girls from these communities is much lower than for boys. While the scheduled castes form 15 per cent of the population, and the scheduled tribes another eight per cent, their proportion in the total primary level enrolment is only 11 per cent and five per cent respectively. Their position in middle school enrolment is even worse, eight per cent and three per cent respectively. This again is related, among other socio-economic factors, to the availability of schooling in the neighbourhood. Only 56 per cent of the scheduled caste population and 78 per cent of the scheduled tribe population had this facility for primary schooling

(which does not mean they actually had access to it). At the middle school stage, the corresponding figures are 13 per cent and 21 per cent respectively.

The mid-term appraisal of the Sixth Plan (1980-85) estimated that the total enrolment in the age group 6-14 years, under both the formal and non-formal systems would be around 110 million—as against the estimated child population of 140 million. That means about 30 million children will remain unenrolled in 1984. And this number consists predominantly of girls in the scheduled castes and tribes particularly in states which are backward in primary education.

One of the many reasons, probably the most important, why primary education makes too small a contribution to the literacy rate (which has increased from 16 per cent to only 36 per cent over three decades), is the rate of wastage. These were high in 1947 and have only been marginally reduced since. It was found that out of 100 children enrolled in class I in 1971-72, only 37 reached class V four years later and only about 23 reached class VIII by 1978-79. The drop-out rate in 1980 was 63.1 per cent for

TABLE 52
Enrolment in classes VI-VIII (1950-51 to 1981-82)

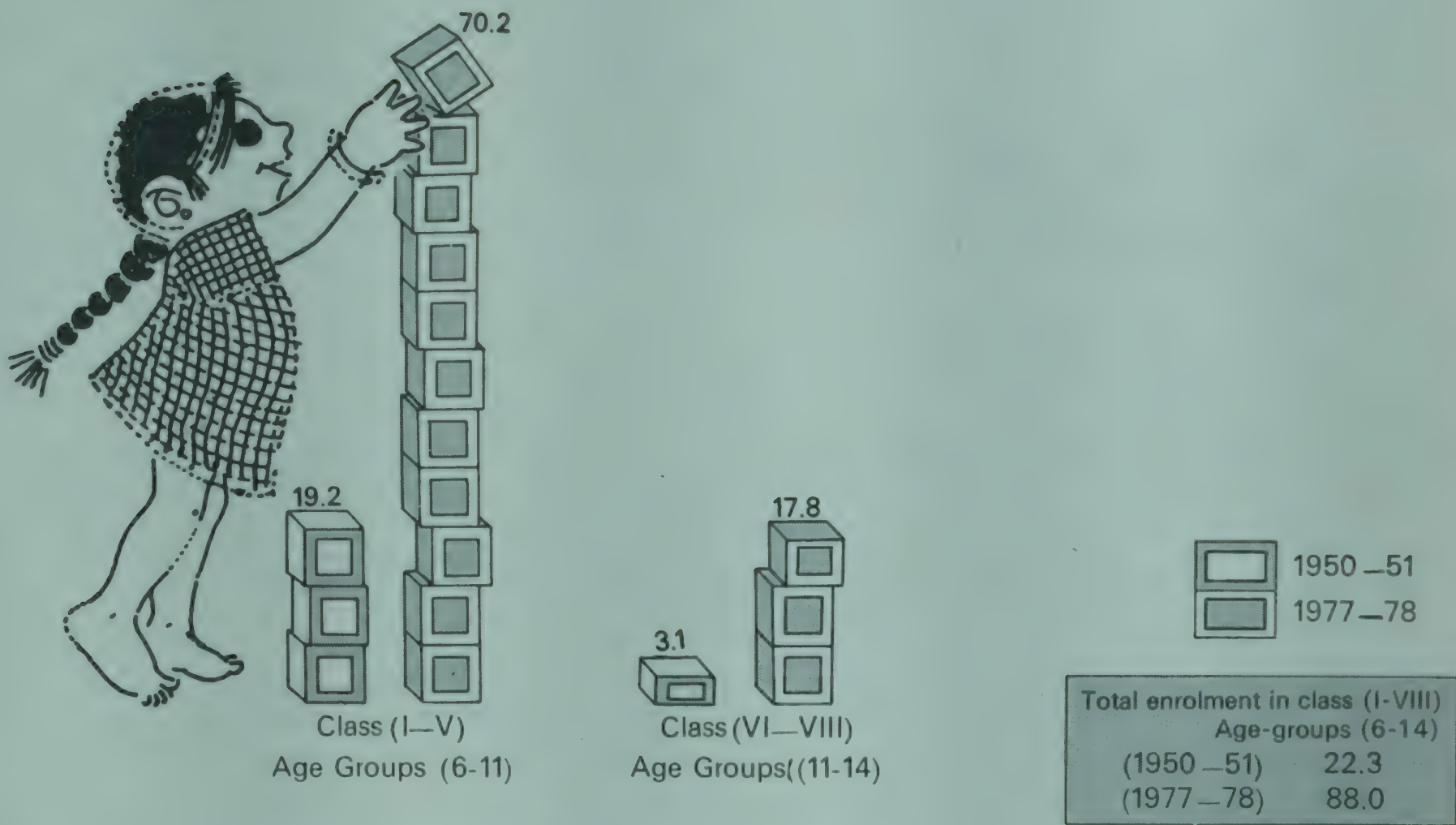
Year	Enrolment (in millions)			Percentage of children enrolled in Classes VI-VIII to total population in the age group 11-14		
	Boys	Girls	Total	Boys	Girls	Total
1950-51	2.586	0.534	3.120	20.8	4.3	12.9
1960-61	5.074	1.630	6.704	32.2	11.3	22.5
1970-71	9.426	3.889	13.315	46.5	20.8	34.2
1980-81(P)	13.278	6.568	19.846	52.1	27.2	40.0
1981-82(P)	13.971	7.084	21.055	54.2	29.1	41.9

(P) Provisional

Source: Ministry of Education

PROGRESS OF ELEMENTARY EDUCATION ENROLMENT

(In millions)



primary school and 77.1 per cent for the middle school.

Attempts have continued to enhance the quality and relevance of primary education. There has been some success in raising the remuneration and professional competence of primary school teachers, in improving curricula, textbooks and supervision and providing amenities such as free books and school lunches to the more needy

segment of the children enrolled. At another level efforts continue to relate the content of primary education to the environment in which the children live, their present needs like nutrition, health, hygiene and sanitation and their future requirements for entering the world of work. The needed qualitative improvement of primary education remains the greatest challenge in the way of making it universal.

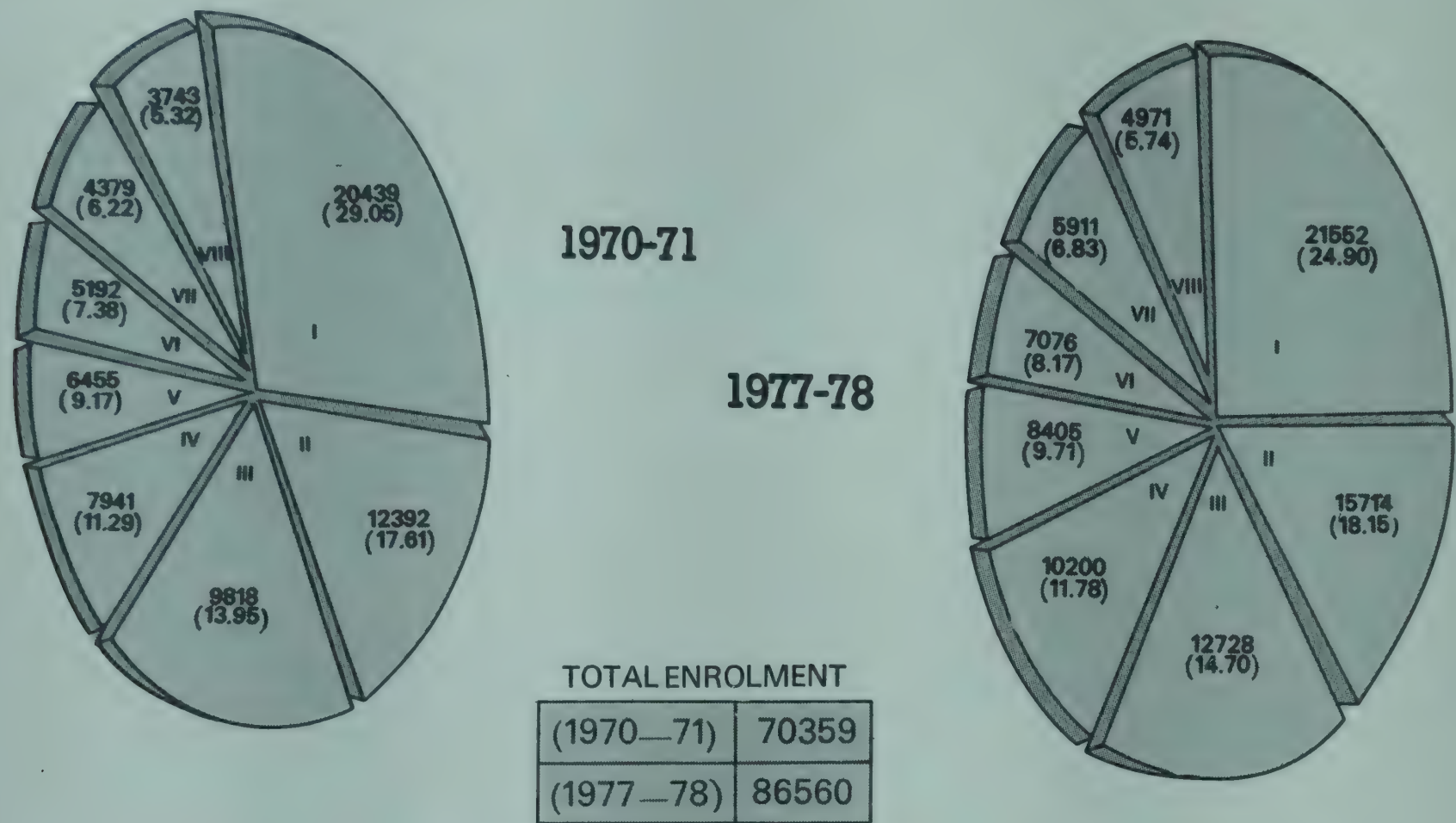
TABLE 53
Enrolment ratios of students belonging to scheduled castes and scheduled tribes during the year 1981-82

Population group	Enrolment ratio at the primary stage classes I-V			Enrolment ration at the middle stage classes VI-VIII		
	Boys	Girls	Total	Boys	Girls	Total
Scheduled castes	109.2	61.4	86.0	45.9	18.5	32.6
Scheduled tribes	95.8	50.2	73.7	30.8	12.6	21.9
General population	99.4	66.9	83.7	54.2	29.1	41.9

Source: Ministry of Education.

COMPOSITION OF ENROLMENT BY CLASS

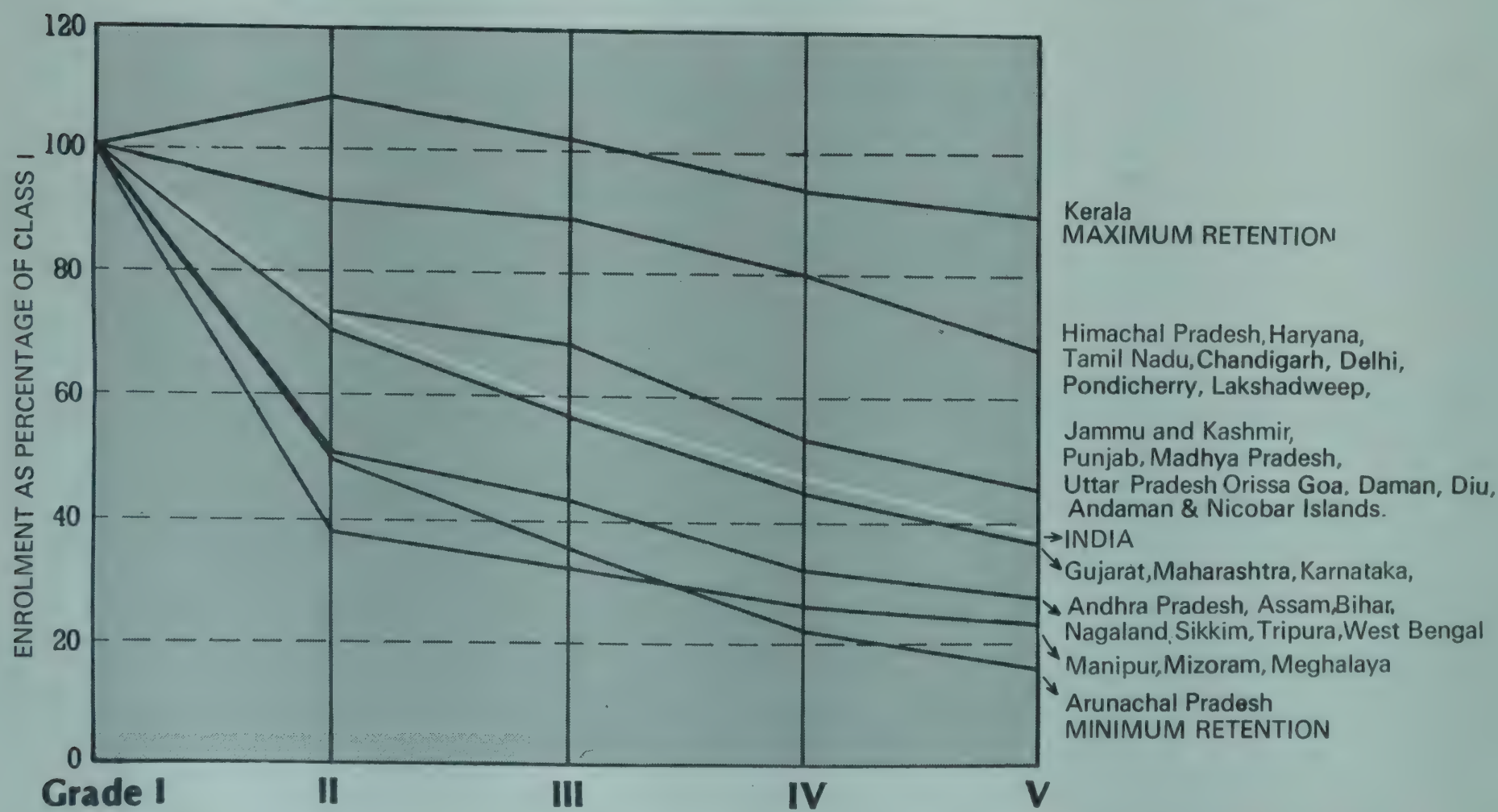
At elementary stage
(In 000s)



Note : Figures in parenthesis indicate percentage to total enrolment

RETENTION CAPACITY OF PRIMARY SCHOOLS 1978

Enrolment in Grades II to V as percentage of enrolment in Grade I



Note : State/Union Territories with similar trends grouped together.

TABLE 54

Number of teachers in primary schools in India (1950-51 to 1981-82)

Year	Number of teachers in primary schools			Percentage of women teachers	Average number of teachers per school
	Men	Women	Total		
1950-51	455,637	82,281	537,918	15.30	2.57
1960-61	614,727	126,788	741,515	17.10	2.24
1970-71	835,340	224,610	1,059,950	21.19	2.60
1980-81 (P)	1,001,977	343,399	1,345,376	25.52	2.77
1981-82 (P)	1,012,660	352,771	1,365,431	25.84	2.76

(P) Provisional

Source: Ministry of Education

TABLE 55

Number of teachers in middle schools in India (1950-51 to 1981-82)

Year	Number of teachers in middle schools			Percentage of women teachers	Average number of teachers per school
	Men	Women	Total		
1950-51	72,609	12,887	85,496	15.07	6.29
1960-61	261,696	83,532	345,228	24.20	6.95
1970-71	463,063	174,506	637,569	27.37	7.04
1980-81 (P)	570,183	260,466	830,649	31.36	7.13
1981-82 (P)	580,049	266,723	846,772	31.50	7.08

(P) Provisional.

Source: Ministry of Education.

An improvement in the quality of primary education is also dependent on the on-going efforts to have multi-purpose school buildings at affordable cost, proper sanitation and drinking water supply, play grounds and essential equipment and furniture, as well as teachers trained and equipped to stimulate learning through new approaches, techniques and content. In fact, curriculum development, teacher training and expansion of physical facilities pull together.

Two trends are noticed in relation to the strength and composition of primary school teachers. The average number per school has remained relatively steady at around 2.5. And there is a progressive increase in the absolute number and relative proportion of female teachers.

3 Adult education

The national aim is to reach by 1990 all adults in the age-group 15-35 through non-formal chan-

TABLE 56

Primary schools according to teachers in position 1978

Number of teachers in position	Number of primary schools	Percentage to total number of primary schools
Zero	2,937	0.62
One	164,931	34.75
Two	129,451	27.27
Three	71,658	15.10
Four	38,726	8.16
Five	24,908	5.25
More than five	42,025	8.85
Total	474,636	100.00

nels of education. As of 1981, the size of the population in this age-group was 235 million. And the number of illiterates among them has been estimated as in table 57.

Of this order of illiterates, only about five million are being presently reached through various adult education programmes including the functional literacy schemes for women. As the actual annual additional coverage is falling short of targets, the ranks of illiterates adults are swelling.

years was 115 million, roughly half of them in poverty. A little less than half the number would belong to the age-group three to six. Presently, only a small fraction of this child population benefit from one kind or another of institutional support (outside the family) for early learning.

TABLE 57
Number of illiterates, 15–35 years

Age	Population	No. of Illiterates (in millions)	Percentage
15–20	74.8	33.6	45.0
20–25	63.2	31.9	50.5
25–35	97.0	50.2	51.8
15–35	235.0	115.7	49.2

Among the challenges to the met are:

- high drop-out rate at the primary stage;
- the problems of motivating adult learners; and
- finding and applying the necessary resources.

The more significant among these sources of support are the integrated child development services (ICDS) which, at the end of 1983, had over 700 projects with about 60,000 anganwadis catering through non-formal means to the learning needs of over 1.7 million children in the age

TABLE 58
Targets for eradicating adult illiteracy (age 15–35, in millions)

1980–81	2.6 (actual)	1985–86	11.5
1981–82	3.1 (actual)	1986–87	14.0
1982–83	4.3 (actual)	1987–88	17.0
1983–84	6.5	1988–89	20.5
1984–85	9.0	1989–90	24.5
	25.5		87.5

4 Pre-school learning

The need for an environment conducive to early learning for children of pre-school age has remained relatively neglected. Not until the 1970s was the concept of a comprehensive programme for the development of the pre-school child, accepted as a plank of national policy. In this the educational element is being recognized as of importance equal to the nutritional and health components. Until recently pre-primary education and care were considered the responsibility of private and voluntary effort. Only lately has the need been recognized for substantial public investment on behalf of the very large number of children of pre-school age who are deprived of the minimum necessary means for physical, mental, social and emotional development at the most formative stage of their lives.

As of 1981, the number of children below six group 3–6 years—in addition to meeting a part of

their health and nutritional needs. On a rough estimate there were at the beginning of this decade over 1,200 nursery schools catering to urban children, over 44,000 balwadis (recognised and unrecognised) and over 10,000 pre-primary schools run by the Ministry of Education.

The coverage of children of pre-school age is to be raised gradually from 12.5 per cent at present, with focus on children from families in poverty. Complementary approaches have been suggested in pursuit of this aim: for example, experimental models for non-formal pre-school education, common facilities for primary schools and day-care centres, expansion of existing facilities of pre-school education including ICDS and other balwadis, and large-scale training programmes for pre-school education workers. Government agencies and voluntary organizations are expected to contribute substantially to this effort.

5 Non-formal alternatives

Whatever be the merits of the formal system of conventional education in relation to certain socio-economic goals, it cannot obviously answer the needs of large segments of the population in terms either of adult education or pre-school learning or, for that matter, elementary education. An important means of creating a genuine social demand for learning opportunities (which is a precondition for universal education) is to tune education to the lives and needs of the deprived. The inability to "sell" education to them is only partially due to their ignorance. It is even more due to the fact that the available education is not really saleable. Based essentially on Western, middle class and urban concepts, it is removed from the values of a traditional, poor and rural society from which the "educated" community itself is alienated.

Poverty has been a handicap for the spread of education in India as elsewhere. But the problem of poverty is more intractable than that of ignorance. So, ways have to be found and techniques evolved whereby primary education can become universal in spite of poverty. Fortunately practical ideas and demonstrated successes are available in the country for others to follow, adapt and improve upon. Some of these ideas and experiences are mentioned below:

- In the present system, work and education appear mutually incompatible, indeed come in each other's way. Children, and even adults, from poor families must be enabled to learn even as they work.
- One way to bring together the world of learning and the world of work is to provide for part-time education at convenient hours.
- Work experience in socially useful productive activities through the learning stage can only enhance the quality and value of education. Even children from well-to-do families would benefit from "learning by doing" rather than fulltime formal education.
- When proper teaching methods are employed, it has been found possible to bring up the attainments of part-time students almost to the same level as that of full-time students.
- The obstacle of poverty in the way of learning can and must be reduced by providing the needy with free books and equipment, free clothes and school meals.
- In addition to the socio-economic issues mentioned above there are a number of academic problems to be resolved to make

non-formal programmes successful. For example, an elastic educational structure has to be created to reduce insistence of the formal system on a single point entry (in class I at about the age of five or six), sequential annual promotions, almost exclusive use of full-time professional teachers and absolute conformity with full-time attendance.

The challenge posed by the need to develop new, non-formal means of education on a national scale is equalled by the unprecedented opportunities provided by this alternative approach to education. A large number of non-formal education centres, over 50,000, have been established in eight educationally backward states, with an enrolment of over one million children. For the country as a whole, there are some 100,000 non-formal centres with three million children on the rolls.

A number of voluntary agencies are active in reaching education to deprived children and adults in non-formal ways. These examples range from the tribal interior of Madhya Pradesh to the street pavements of Calcutta.

The non-formal sector has a special relevance to the education of out-of-school youth, adults, particularly women, and the potential leadership of community groups for work in social and economic development. An opportunity is provided for example, by the training programmes for health workers, agriculture and animal husbandry workers and other village level cadres.

Both the formal and non-formal channels for learning are expected to be vastly strengthened by a recent development: satellite communication using the radio and television networks. About 2500 schools spread over six states are already linked to this programme. More are to follow. And, for the first time it has become possible to reach remote tribal and rural communities with educational programmes.

6 Expenditure on education

The order of development expenditure on education through the Five Year Plans is shown in table 59

An analysis of the composition of public expenditure on primary education is interesting: A close look reveals that the bulk of expenditure on primary education—about 95 per cent of it—goes to teachers' salary. In per capita terms, public expenditure on education of all types has been computed at Rs. 57 in 1981–82. This varied widely from state to state, from Rs. 399 in Lakshadweep to Rs. 35 in Uttar Pradesh.

TABLE 59
Expenditure on education (through the Five Year Plans)

	(Rs. in million)					
	1951-56	1956-61	1961-65	1969-74	1974-79	1989-85(a)
Public Sector plan spending	19,600	46,720	85,770	157,240	394,260	975,000
Social Services*	4,120 (21.0)	7,270 (15.6)	12,960 (15.1)	24,580 (15.6)	63,720 (16.1)	140,350 (14.0)
Education	1,530 (37.0)	2,730 (37.0)	5,890 (45.0)	7,860 (32.0)	13,360 (21.0)	25,240 (18.0)
Elementary education	850 (55.0)	950 (35.0)	2010 (34.0)	2,390 (30.0)	4,230 (31.7)	9,050 (36.0)

(a) allocation
* Social services include education, health, family planning, housing and urban development, water supply and sanitation, social welfare, welfare of backward classes, labour welfare, rehabilitation, nutrition and other miscellaneous services.
The figures in brackets are percentages of the corresponding figure in the preceding row.
Source: Planning Commission

TABLE 60
Expenditure on primary education (classes I-V) (1978-79)

	Rs. in million	Percentage of total
Teachers' salary	6,218.14	95.3
Administratation and supervision	121.31	1.9
Others	73.42	1.1
Capital	113.93	1.7
	6,526.80	100.0

It is clear that the social objective and obligation of universal elementary education carries with it the commitment to improve the quality of education and therefore to invest a higher level of public funds in its support.

Note: This expenditure includes current and capital accounts, under plan and non-plan sectors of the Central and State budgets.
Source: NCERT

Chapter VI

Women

Women are subjects of development in their own right. They are also the principal providers of care and support for infants and children. The role of women in the economy and their status in society thus become crucial for children and for development.

Some of the many variables that determine the complex relationship between women and development have been discussed in the preceding four chapters. The trends noticed in relation to females in the demographic evolution as well as in health, nutrition and education are not autonomous but intimately interlinked. These trends are almost always adverse to women. This phenomenon cannot be explained as distortions arising from poverty, but rather understood against a common denominator of inbuilt social prejudice and discrimination against women. Even if poverty were reduced, the situation of women is unlikely to improve unless social attitudes towards them change and their essentially dependent status gives way to equality with men.

1 Demographic imbalance

The declining proportion of females to males in India (table 22, Chapter 2) is exceptional to the general pattern in other parts of the world, namely an excess of female population. If female infants die at a faster rate than male infants, despite their biologically superior strength, the inference is that social neglect of female health is deeply entrenched.

In the common pattern of life expectancy, women outlive men. In the developed countries, on an average, they live longer than men by nearly 10 years. In India, the gap between male and female life expectations has begun to decline since 1971 (table 21, Chapter 2). The female life expectancy continues to increase but at a rate lower than for males—although the average female life is well over 50 years. Social scientists attribute social factors to this unusual trend.

The mortality among females is greater than among males at all ages, more so in the age group 15–35 years (table 20, Chapter 2). While

an improvement of health services has helped to bring down the death rates of both males and females, men appear to have benefited from it more than women. The gross inadequacy of maternal and child health services is evident from the unacceptable rates of maternal mortality (418 per 100,000 live births as of 1972) and infant mortality (table 13 Chapter 2). But women in India need more than maternal and child health services.

2 Unequal access to health and nutrition

There are no specific public services for those who are neither pregnant nor nursing. The number of hospital wards and beds reserved for women is far fewer than that for men. Because of social barriers, women do not usually go to male doctors. And there are not enough women doctors in the villages. Large scale under-reporting of women's illnesses is widely suspected, especially from the rural interior.

In a man's world women get low priority, when it comes to using available services. It is reported, on the basis of records of indoor and outdoor patients of medical institutions, that for every three men who avail of health services, only one woman does so. Yet the percentage of sick women appears to be higher than that of sick men at any given time. Clinics are often not open at times convenient for women to attend and generally a woman is seen not to seek treatment unless severely ill. The explanation for all of these is essentially social.

As will be seen from Chapter 4, the nutritional status of the generality of men, women and children appears to be low, but within this spectrum that of women seems to be even poorer. The agricultural labourers, paradoxically, are the worst sufferers, along with women in slums, drought-affected areas and remote tribal regions. It is estimated that on an average an Indian woman becomes pregnant eight times and gives birth to 6 to 7 children of whom 4 to 6 survive. Out of 30 years of reproductive life, she spends 16 years in pregnancy and lactation. And she typifies some 140 million malnourished women.

The theory that a woman needs less nutrition

than a man is based on the assumption that she expends less calories. The reverse seems to be true, by the results of a survey in a rural area of the labour contribution of men, women and children. These were found to be 31, 53 and 16 percent respectively. Apart from those morbid effects of lack of nutrition discussed in Chapters 3 and 4, malnutrition is suspected to cause, to one degree or another, psychological problems in women. In the past, activities like household duties, rearing of children, fetching water and firewood, carrying meals to the fields where the menfolk work, were never measured for the purpose of computing nutritional requirements. The oppressive conditions in which the majority of women silently bear this daily burden are another matter.

3 Dual economic role

Besides being producers, processors and distributors of food to their families, women are also earners of essential cash income which goes towards the family's basic needs. Women have therefore a dual productive economic role—as unpaid labourers at home and in the fields, and as paid labourers outside the home. In poor households, a high percentage of the family income as well as labour goes into meeting food needs. The ways in which women earn cash directly and the ways in which they as “home-makers” support the money-making capability of the household, are therefore important for health and nutrition. Influences on the economic situation of women, and on their work, directly affect the wellbeing of the family. Likewise, because of the traditional responsibilities women have, in the care of the household and of the children, the conditions at home will directly affect women's productive ability.

TABLE 61
Work participation rates for main workers—1971, 1981.

	Males		Females	
	1971	1981	1971	1981
All ages				
Total	52.61	52.62	12.06	13.99
Rural	53.62	52.62	13.36	16.00
Urban	48.80	48.54	6.65	7.28

Source: Census of India, 1981.

Women are faced with a difficult trade-off between the social and economic value of their unpaid labour within the home and that of their paid employment in the marketplace. Each woman works out, often intuitively, her own

and her family's survival strategy. Research shows that the poorer the household the more burdensome her unique role.

The number of households where a woman happens to be the head, appears to be increasing. Such households are vulnerable to poverty because these women usually retain the primary responsibility for child care and home maintenance, which must be compatible with market-oriented activities.

Studies show that cash in the hands of women is likely to be directed towards basic health and nutrition of their children. Evidence indicates that who earns the income is almost as important as how much is earned. Hard data are difficult to come by, but studies suggest that men spend on food a smaller proportion of their income than women and that there is a positive association of women's income and the wellbeing of their children.

4 Educational neglect

As will be discussed later, employment certainly holds the key to improvement in the status of women. For, it determines the level of food availability, nutrition and other essential demands. It is a decisive influence on productivity as well as the structure of the household and the relationships within the family. But education is no less important, for education determines aspirations, technology, productivity and social mobility. It also changes perception of values of human beings and their contribution to the economy of the household and of the nation.

Illiteracy is the greatest barrier to any improvement in the position of women—in employment, health, the exercise of legal and constitutional rights, in attaining equality of status and equal opportunities in education itself. The correlation between education of women and infant mortality is borne out by table 50, Chapter 5. The inverse relationship between fertility on the one hand and female literacy and higher age at marriage on the other is clear from Chapter 2, section 8.

Female literacy and education, along with employment and income, are decisive for the improvement in the quality of the family's life and steady reduction in fertility. A woman's ability to control the size of her family is closely related to her educational status. As will be seen from table 43, Chapter 5, the literacy levels of both males and females have been steadily, if very slowly, increasing from 1901 to 1981. However two significant inferences can be drawn from the comparative figures for males and females through these eight decades. The female literacy percentage is still only a little more than half that of males. And the gap between the two, in

percentage points, is not closing but rather widening—from 17.02 in 1951 to 22.07 in 1981.

Social attitudes towards women's education seem still to be rather negative. According to a 1971 survey carried out by the Committee on Status of Women in India, 16.8 percent of the respondents rejected the view that girls should be educated at all, and as many as 64.5 percent disapproved of higher education for girls even if they have proved themselves to be very intelligent. What society expects of women is self-contradictory: the ability to supplement the family income is a plus point in the marriage market but at the same time it is thought that the woman's occupation should not in any way interfere with her role as a dutiful housewife and mother. These expectations have reduced employed Indian women to over-worked, harassed and exploited individuals, rushing from one responsibility to another with hardly any time left for their own needs and comforts. Thus women's status is not only linked to her educational achievement but to her employment potential as well.

5 Earning potential

The employment situation of women must be read against the economic setting outlined in Chapter 1, and particularly against the background of section 8 of that chapter on social equity. While the physical achievements of economic planning have been considerable, the pace and direction of progress and the forces towards equality have not been sufficiently focused to make a decisive difference to the lives of the majority. The beneficial effects have been uneven, the negative trends have remained almost invincible. As a result, both wealth and poverty increased, similar to the parallel increases in health facilities and ill-health, literacy and illiteracy, new employment opportunities and

TABLE 62
All-India worker rate

	Workers Population		Population Sex-ratio	Workers Sex-ratio
	Men	Women		
1901	31.70	61.11	972	504
1911	33.73	61.90	964	525
1921	32.67	60.52	955	516
1931	27.63	58.27	950	450
1951	23.31	54.04	946	408
1961	27.93	57.12	941	460
1971	14.22	52.75	930	215
1981	20.85	53.19	926	367
(provisional)				

Source: Census of India, various year except 1941

unemployment. This points to the duality of the Indian situation as between the poor and the non-poor and also between men and women.

Unemployment in India is heavy and probably growing, as noted in Chapter 1. But it would be less than correct to conclude that women remain idle in any large number. Rather, they are over-worked in unpaid labour and are mostly unemployed in relation to paid labour.

The estimate of the total female labour force was 78.6 million in 1973, 88.9 million in 1978 and 99.4 million in 1983—an average annual addition of 2.1 million. The total labour force in 1983 was 306 million.

The female work participation rate declined from 33.7 percent in the 1911 census to 28 percent in the 1961 census. Thereafter it seems to hover around that percentage level, according to official estimates. However, the National Committee on Status of Women (1975), as well as some researchers feel that there was a sharp decline over 1961–71—even after allowing for the changed census definition of work. Under the new definition the female work participation rate was 12.06 percent by the 1971 census and 13.99 percent by the 1981 census, marking a marginal improvement.

TABLE 63
Percentage distribution of main workers and marginal workers, 1981.

	Main workers		Marginal workers	
	Males	Females	Males	Females
Total	100.00	100.00	100.00	100.00
Cultivators	43.70	33.20	41.66	47.91
Agricultural labourers	19.56	46.18	33.29	41.43
Livestock, forestry, fishing, hunting and plantations, orchards and allied activities	2.34	1.85	3.68	1.64
Mining and quarrying	0.62	0.36	0.25	0.06
Manufacturing, processing, servicing and repairs				
(a) Household industry	3.18	4.59	3.03	4.07
(b) Other than household industry	8.92	3.55	5.34	2.15
Construction	1.81	0.80	1.95	0.39
Trade, commerce	7.33	2.04	4.86	1.04
Transport, storage, communications	3.32	0.38	1.71	0.06
Other services	9.22	7.05	4.23	1.25

Sources: Census of India, 1981.

In 1973 about 45 percent of the total working women were unpaid helpers in family farms or non-farm enterprises. The daily unemployment rate for women, 10.1 percent, was higher than the 7.9 percent for men, according to a 1977–78 survey.

A striking feature of employment for women over 1973–78, has been their share of total unemployment, measured in unemployed days, at about 40 percent. This is higher than their share of one-third in the total labour force. Thus the labour market is not neutral as between women and men, but adverse to women.

The organized sector in India absorbs less than an eighth of the actual workforce. Of this the share of women, as of 1978, was 12.4 per cent. This is a small improvement from 11 percent in 1971, but seems to be confined mostly to public undertakings. Meanwhile the share of women in employment exchange registrations rose from 11 to 12.8 percent over 1973–78. But their share in placement has not kept pace. Thus the proportion of women in the “live register” has only increased.

Of the unorganized sector, official statistics do not provide a full picture. The participation data for women do not include the majority of rural women who spend their time and effort in the collection of fuel, fodder and vegetables which are either for direct consumption by the family or are sold to meet the family's other needs. Similarly, women who help in family occupations like dairying, poultry rearing, raising and maintenance of kitchen gardens, sewing, weaving and similar subsistence-level occupations are not counted. It has been observed that the average hours of unpaid work done by married women outside the home varied from 6.13 to 7.53 hours per day, some of them working more than 10 hours each day. Apart from domestic duties, women engaged in agricultural operations work on an average about 12 hours on the farm and in taking care of cattle at home.

About 80 percent of female workers are engaged in agriculture as labourers or cultivators, according to the 1981 census. More than a third of all women workers are cultivators and almost half are agricultural labourers. Within the farm sector women are allotted work involving greater drudgery. Clearly, increasing the female work participation rates is not sufficient to raise women's status. Women need educational opportunities that would enable them to undertake economically and psychologically rewarding work, so that they gain a higher degree of control over their own lives.

The economic contribution of India's “uneducated” millions of women remains unrecognized mainly because the contributors are unorga-

nized. There are millions of homes all over the country, in villages and towns, which double as workplaces to produce items of daily household use like food, cloth, shoes, baskets, buckets, brooms, carpets and a variety of goods of artistic value. The process of industrialization has eroded the market for these home-based products. Slowly, these producers, conspicuously including women, have had to lose their tools and equipment, their sources of raw materials and market outlets to the factories of mass production. They are forced to work as piece-rate workers doing manual labour for traders, middlemen, contractors and big companies.

Increasingly, self-employed women are organizing themselves into productive associations to protect themselves from exploitation. Several examples of such successful activity exist in many states.

6 Legal protection

Only a small part of the social disabilities of women has been checked by laws incorporating social reforms. Legislation introducing changes against traditional ways of life has been slow. Even where laws have been enacted, their enforcement and acceptance depend on public opinion and response as well as on the commitment and competence of those in charge of administration. Although the Dowry Prohibition Act became law in 1961, the practice of dowry is still widely prevalent. In recent years anti-dowry movements of women across socio-economic classes have aroused public consciousness. Courts of law are also taking a stricter view of the violation of the law, which often takes the form of extreme cruelty to brides.

Women's organizations have been vocal on issues like prevention and punishment of crime against women, but cases of such violations continue to be reported almost daily. Prison conditions for women remain deplorable. Special programmes, governmental and voluntary, for female populations among tribal and scheduled castes have made little practical impact, though levels of awareness seem to have risen. A number of legal provisions exist for the protection of working women, like the Equal Remuneration Act, the Minimum Wages Act and the Factories Act—not to mention the articles of the Constitution itself. Cases of gross violation of those legal provisions relating to women are all too common.

7 Political participation

The level of political participation by women provides an index of their social situation. The voter turnout in the last parliamentary poll, in January 1980, was 59.92 percent overall—62.16

for men and 51.17 for women. The sex differential was the least in 1977 of all the elections so far (64.49 for men and 54.54 for women). There have been sharp inter-state variations in female voter turnover in every national election—reflecting a close correlation between the rates of literacy and voter participation. However, voter participation does not necessarily increase with education, as distinct from literacy. Female voter turnover has been as low as 13.21 percent in Orissa (1962) and as high as 74.20 in Kerala (1967). This may be read with table 15, Chapter 5, on female literacy.

There is little evidence of any strong link between female voter participation and women contesting or winning elections. The number of female contestants in the seven parliamentary elections from 1952 to 1980 has been a negligible fraction (within 2 and 4 percent of the total number in the field). There were, for example, only 142 women in a field of 4620 in the 1980 elections. The proportion of seats won by women has been slightly better, between 3 and 7 percent. The number of women members of parliament varied from 14 (in a house of 489 in 1952), to 35 (out of 494 in 1962) and 28 (out of 528 in 1980).

8 Social solidarity

While a nucleus of strong leadership exists among women as a base for advocacy and

action, issues of particular concern to women hardly figure in election campaigns or debates. A successful effort to mobilize Indian women, across the spectrum of castes and classes, was made during the struggle led by Mahatma Gandhi for national independence. After relative inaction for several decades, a number of organizations have lately come up as an expression of righteous protest at the social disabilities of women visibly worsened by poverty and political neglect.

A hopeful feature of the present is that a large number of women's groups exist, mostly in rural areas—an estimated 70,000 with a membership of around 1.75 million women. But only about a tenth of these Mahila Mandals are active. Social workers are trying to promote Mahila Mandals wherever there is none, to reactive the inert ones, and to reshape all of them into a movement that could liberate women in the low income groups from their social and economic disabilities—instead of being dependent organizations of dependent individuals, delivering at best a few welfare services.

The report of the World Conference of the UN Decade for Women (Copenhagen, July 1980) has a sentence which reads: "While women represent 50 percent of world adult population and a third of official labour force, they perform nearly two-thirds of all working hours, receive only a tenth of world income and own less than one percent of world property". This would be true, more or less, of India too.

Chapter VII

Environmental Sanitation, Water Supply and Urban Shelter

1 The Environment

The natural environment in which children are born and are expected to grow up has been deteriorating, largely through its shortsighted manipulation by man. Some examples would illustrate:

The land area prone to floods has doubled from 20 million hectares to about 40 million hectares over the past 10 years. About 70 per cent of all the available water in India is polluted. Some 73 million work days are lost due to water-related diseases. Soil salinity and water-logging affect over a quarter of irrigated land.

Over one million hectares of forests are cut every year according to unofficial estimates. Large quantities of top soil are washed away by each monsoon. Intensive agriculture, without supplementation by organic manure, is rapidly depleting soil fertility. More plant nutrients are being taken out of the soil than put back into it.

The scarcity of firewood (which, together with cowdung and crop wastes, provide about 90 per cent of the country's cooking energy needs) has become acute in rural as well as urban areas. Firewood prices have doubled in the past six years in many cities.

Air pollution in the major cities is increasing. Sixty percent of Calcutta's 10 million residents are reckoned to be suffering from respiratory diseases on account of it.

Sanitation is one of the weakest links of development in both rural and urban areas. For instance, sanitary means of excreta disposal are practically non-existent in rural India. Even in the towns nearly three-fourths of the population do without them.

A safe source of drinking water is intimately related to any plan for disease prevention and health promotion, especially in the case of children. As of 1981, 59 per cent of India's population, or 395 million people (302 million in villages and 93 million in towns), were without clean drinking water supply.

In a context of extreme poverty and high illiteracy resulting in poor sanitation and personal hygiene, water related diseases continue to be

leading killers of infants and children. According to official statistics, the incidence of acute diarrhoeal diseases is estimated to be 500 per 1,000 infants, and 200 per 1,000 children of pre-school age. The number of deaths of children under five years consequent to diarrhoea is an estimated 1.5 million each year. The incidence is higher in the age group 3–16 months and the peak incidence between six and nine months. The negative impact on the national economy is clear from an annual loss of 1,800 million person hours due to water related diseases like diarrhoea, dysentery, cholera, typhoid and jaundice.

The lack of sanitation and safe water assumes crisis proportions in the rapidly expanding urban slums where shelter itself is a problem. Nearly a fourth of India's population lives in urban areas. And about a fifth of the urban population lives in slums. Their number would be 25–30 million.

A brief discussion of the situation in respect of environmental sanitation, drinking water supply and urban slums follows:

2 Sanitation

The progress towards better sanitation, rural or urban, during 1970–81 had been negligible or nil. Only 5.6 per cent of the country's population were served by reasonably adequate facilities in 1970. The proportion improved to 6.4 per cent by 1981, and that too *because* of the very slight progress in the rural coverage (0.1 per cent to 0.5 per cent); and *despite* a slippage from 27.5 per cent to 26.9 per cent in the urban population served.

In 1980, only 198 towns out of 3119 had sewerage facilities. Even among cities with a population of 100 thousand and more, only 46 per cent had a sewerage system and some arrangement for sewage treatment. Except for some pilot projects in a few states sanitary facilities have been absent in the rural areas.

At the beginning of this decade, few rural households had any latrine. In absolute numbers 629 million people or 94 per cent of the country's population were without a proper facility for

excreta disposal (521 million in villages and 108 million in towns).

The situation reflected in the foregoing figures has begun slowly to change—in terms of popular

TABLE 64
Access to sanitation (population served in millions)

	1970		1975		1981	
	Population	Percentage served	Population	Percentage served	Population	Percentage served
Urban	30.0	27.5	35.5	27.8	39.93	26.9
Rural	0.5	0.1	1.7	0.4	2.80	0.5
Total	30.5	5.6	37.2	6.1	42.73	6.4

Source: National Master Plan for Water Supply and Sanitation (April 1981–March 1991), Ministry of Works and Housing, July 1983.

TABLE 65
Access to sanitation—1981 (population served in millions)

States/Union Territories	Rural Area		Urban Area		Total	
	Population served	% age served	Population served	% age served	Population served	% age served
INDIA	2.80	0.5	40.03	26.9	42.83	6.4
States						
Andhra Pradesh	—	—	1.40	12.7	1.40	3.0
Assam	0.18	1.0	0.30	12.5	0.48	2.4
Bihar	2.36	3.9	1.74	22.2	4.10	6.0
Gujarat	0.06	0.3	4.37	44.0	4.43	13.4
Haryana	—	—	0.35	14.5	0.35	2.8
Himachal Pradesh	—	—	0.05	13.2	0.05	1.1
Jammu & Kashmir	—	—	0.10	8.0	0.10	1.6
Karnataka	0.04	0.1	3.62	37.9	3.66	10.3
Kerala	0.10	0.5	0.30	6.4	0.40	1.5
Madhya Pradesh	—	—	0.54	5.5	0.54	1.0
Maharashtra	—	—	8.42	40.0	8.42	13.8
Manipur	—	—	—	—	—	—
Meghalaya	—	—	—	—	—	—
Nagaland	—	—	—	—	—	—
Orissa	—	—	0.29	10.7	0.29	1.1
Punjab	—	—	1.64	38.9	1.64	10.2
Rajasthan	—	—	0.30	4.8	0.30	0.9
Sikkim	—	—	—	—	—	—
Tamil Nadu	6.46	20.6	12.90	81.0	19.36	40.9
Tripura	—	—	0.01	3.7	0.01	0.5
Uttar Pradesh	—	—	2.56	16.3	2.56	2.4
West Bengal	—	—	2.24	14.8	2.24	4.0
Union Territories						
Andaman and Nicobar Islands	—	—	0.02	48.0	0.02	12.7
Arunachal Pradesh	—	—	0.02	73.4	0.02	3.5
Chandigarh	—	—	0.48	94.1	0.48	92.3
Dadra and Nagar Haveli	—	—	—	—	—	—
Delhi	—	—	3.70	65.1	3.70	59.9
Goa, Daman & Diu	—	—	0.06	13.5	0.06	5.0
Lakshadweep	—	—	—	—	—	—
Mizoram	—	—	—	—	—	—
Pondicherry	—	—	0.12	52.2	0.12	20.3

Source: National Master Plan for Water Supply and Sanitation.

perception, government policies and budgetary priorities. For instance, the percentage expenditure on sanitation, together with water supply, in relation to the total development plan outlays has been increasing from a modest 1.23 per cent in the Third Five Year Plan to 4.01 per cent in the Sixth Plan. While urban sanitation has become integral to slum improvement programmes, rural sanitation has achieved something of a policy breakthrough in that state government budgets are beginning to allocate substantial sums, as compared to none previously. At the national level, a composite master plan for water supply

and sanitation for the period April 1981 to March 1991 has been prepared with guidelines for action, programme goals and funding support. Accordingly the aim is to serve 80 per cent of the urban population, the following way: 100 per cent coverage with sewerage and sewage treatment facilities for towns with population of 100 thousand and more; and low cost sanitation in a variety of ways in the other towns. The rural part of this plan is to reach a fourth of the population with low-cost sanitary methods and waste disposal facilities.

TABLE 66

Access to safe water supply 1981 (population served in million)

States/Union territories	Rural Areas		Urban Areas		Total	
	Population served	% age served	Population served	% age served	Population served	% age served
INDIA	162.07	30.9	115.48	77.8	277.55	41.3
States						
Andhra Pradesh	16.74	41.1	6.91	62.5	23.50	46.0
Assam	3.50	19.9	0.53	22.0	4.03	20.2
Bihar	41.92	69.4	5.53	70.4	47.45	69.5
Gujarat	16.26	70.3	9.43	95.0	25.69	77.7
Haryana	2.76	27.3	1.13	47.0	3.89	31.1
Himachal Pradesh	1.81	46.3	0.33	95.6	2.14	50.2
Jammu & Kashmir	1.74	36.4	1.23	100.0	2.97	49.4
Karnataka	8.16	31.3	9.53	99.8	17.69	49.7
Kerala	6.05	28.4	2.85	60.8	8.90	34.3
Madhya Pradesh	13.04	30.2	7.10	72.4	20.14	37.9
Maharashtra	7.63	19.2	20.87	99.2	28.50	46.9
Manipur	0.27	24.6	0.26	70.3	0.53	36.1
Meghalaya	0.22	19.6	0.06	27.8	0.28	21.1
Nagaland	0.33	67.4	0.07	30.4	0.40	55.6
Orissa	7.86	32.3	1.07	39.2	8.93	33.0
Punjab	2.38	20.1	3.05	72.3	5.43	33.8
Rajasthan	9.89	36.3	4.06	65.7	13.95	41.7
Sikkim	0.05	25.0	0.03	27.3	0.08	25.8
Tamil Nadu	6.46	20.6	12.90	81.0	19.36	40.9
Tripura	0.74	40.3	0.11	38.9	0.85	40.1
Uttar Pradesh	6.49	7.2	13.99	88.8	20.48	19.4
West Bengal	6.44	15.8	8.67	57.2	15.11	27.0
Union Territories						
Andaman & Nicobar Islands	0.08	55.0	0.05	100.0	0.13	63.7
Arunachal Pradesh	0.39	64.3	0.02	83.4	0.41	65.2
Chandigarh	—	—	0.48	94.1	0.48	92.3
Dadra & Nagar Haveli	0.04	44.5	—	—	0.04	44.5
Delhi	0.29	58.0	4.70	82.7	4.99	80.7
Goa, Daman & Diu	0.17	23.0	0.33	77.2	0.50	43.1
Lakshadweep	0.01	7.5	—	—	0.01	7.5
Mizoram	0.11	32.3	0.01	14.7	0.12	29.3
Pondicherry	0.24	66.7	0.18	78.3	0.42	71.2

Source: National Master Plan for Water Supply and Sanitation.

2 Water

Water scarcity in India must be viewed against the physical and demographic factors affecting the availability of water. The system of monsoon winds, the lie of the mountains, erratic rainfall and unpredictable cyclones lead to periodic flooding of villages and drought in some years and very low rainfall in certain other dry zones.

The population of south-central India, including Rajasthan for example, lives in an area underlaid by hard rock, often with low rainfall and a rapid run-off leaving little water on the surface. Ground water here is difficult to reach with traditional methods of well-digging or drilling with old-fashioned tools.

Access to safe water supply varies widely among the states. In rural areas it ranges from 70 per cent in Gujarat and Bihar to seven per cent in Uttar Pradesh; in urban areas from 100 per cent in Jammu and Kashmir to 22 per cent in Assam.

Overall scarcity of safe water occurs in both the situations: where there is no water available at all; and where there is surface water which is unsafe for drinking due to pollution caused by pathogenic organisms and/or other dissolved toxic mineral contamination.

Significant strides have been taken by India to mitigate the critical situation in regard to the supply of drinking water to the rural population. The financial allocation for the purpose, during 1980–85, amounts to an unprecedented Rs. 20 billion. At the beginning of this period 231 thousand problem villages (or two-fifths the total number of villages) were identified as having a priority need for drinking water supply. Of these, about 146 thousand villages were found as difficult villages (that is those villages which did not have an assured supply of drinking water within a distance of 1.6 km); and more than 69 thousand as health problem villages. Of these latter, 43 thousand were endemic to diseases like cholera and parasites like guinea-worm; and in the remaining 26 thousand villages water was unsafe due to an excess of salinity, iron, fluorides or various toxic elements.

After the first three years of intense activity, an estimated number of 98,500 of these problem

villages have been provided with a minimum supply of potable water. This is some amends for the slow progress during the first five of the Five Year Plans. The pace is however not too fast in relation to the national targets for 1991: full coverage of the urban population through piped water supply wherever feasible and standposts in peripheral areas at strategic locations; and full coverage of the rural population: through piped water supply for 30 per cent of the population and spot source supply for the remaining 70 per cent by way of dug wells for tubewells with handpumps or power pumps.

If the targets for 1991 are to be met an estimated outlay of about seven per cent of the development plan budget would need to be allocated to the water and sanitation sectors as against four per cent currently.

3 Slums

By the turn of the century, a third of India's population is likely to be living in some three to four thousand towns and cities. It is possible that about half of this number of people will be defined as poor and therefore living mostly in slums—unless effective and timely steps are taken to prevent this concentration of poverty. Again, in the absence of appropriate policies the needs of children and women of the urban poor may continue to receive the least priority at all levels of policy planning.

Less than one per cent of the total Sixth Plan outlay over 1980–85 went for slum improvement. Municipal corporations and local bodies are finding it difficult to meet the demands made on them. A majority of them run into budgetary deficit as they try to cope with unabated migration from village to town.

The creation of new but unplanned settlements and the extension of the existing ones have resulted in unprecedented pressure on urban land, a steady deterioration of the fully stretched urban services and an environmental degradation symbolized by slum settlements, overcrowding, chaotic traffic hazards, haphazard development, derelict neighbourhoods, inadequate water supply and sanitation, insufficient services and low standards of civic management.

TABLE 67
Access to safe water supply 1970–81 (population served in millions)

	1970		1975		1981	
	Population	Percentage served	Population	Percentage served	Population	Percentage served
Urban	66.3	60.8	107.0	83.8	115.48	77.8
Rural	25.0	5.7	86.0	17.9	162.07	30.9
Total	91.3	16.7	195.0	32.1	277.55	41.3

Source:National Master Plan for Water Supply and Sanitation.

TABLE 68

Total plan outlay and expenditure on water supply and sanitation

Development Plan	Total Outlay	Water Supply & Sanitation Sector	
	(Rs. in millions)	(Rs. in millions)	(percentage to total outlay)
Third (1961–66)	85,765	1,057	1.23
Annuals (1966–69)	66,254	1,027	1.55
Fourth (1969–74)	157,825	4,589	2.91
Fifth (1974–79)	394,622	10,916	2.77
Annual (1979–80)	121,765	3,876	3.18
Sixth (1980–85)	975,000	39,078	4.01
Total	1,800,871	60,543	3.36

Source: National Master Plan for Water Supply and Sanitation.

The rates at which the urban population grows in towns of different categories of size, and the slums within them, has an obvious bearing on the general trend of steady deterioration in the quality of life of all the urban population and in particular the poor.

During 1971–81, India's total population grew by 25 per cent. Over these years the urban population grew by 46 per cent. Within the urban population, the fastest growing have been those cities in the population range of 250–500 thousand, and small towns of less than 100 thousand population.

While reliable estimates are difficult to come by on the growth rate of slum population, it is probably growing faster than any other segment of the urban population. A recent study estimates that 25 million people live in urban slums in various parts of the country. Another projects the 1985 figure at 33 million.

Among the states, Maharashtra has the highest slum population of about seven million or 30 per cent of its total urban population. Dharavi in Bombay is a colony of half a million squatters, among the world's largest and the least livable. West Bengal and Andhra Pradesh come next with a tally of four million slum people for each.

An index of the enveloping slumscape is provided by the order of the needs in urban

housing, unmet and unlikely to be met in the measurable future. The shortage was 2.9 million houses in 1971; it rose to 4.8 million by 1981 and is rising to an estimated 7.2 million by 1991. Forty per cent of all urban families live in just one room. About 70 per cent in Calcutta and 82 per cent of the Bombay population live in one-room tenements with common latrines. A recent survey of Kanpur showed that 58 per cent of the population live in one-room huts and another 26 per cent in two room tenements.

Several studies point to two inferences: on the one hand, the most common illness among slum dwellers are respiratory diseases, gastro-intestinal disorders, skin diseases, fever, worms, ear, nose and throat ailments and not the least, tuberculosis. On the other, the provision of safe water supply, proper drainage and latrines were found to reduce gastro-intestinal disorders to a level equivalent to those in nearby non-slum areas, although viral infections, skin diseases and respiratory diseases remained significantly higher in the slum population. Environmental improvement—in addition to improved productivity, earning capacity and basic health and education services—remains an important element of any strategy for improving the living conditions of the slum community.

Chapter VIII

Disability, Destitution and Labour

Given the priority for development of children, society cannot afford to wait till disability, destitution or other forms of deprivation take over young lives. Prevention of these conditions must become as overriding a concern as prevention of disease. But the extent of prevalence of disability and destitution (which drives children to exploitative wage labour), leaves no option but to reach succour and support to those in distress.

1 Childhood disability

A disabled child has been defined as one who is unable to ensure by himself, wholly or partially the necessities of a normal individual or social life including work, as a result of deficiency, whether congenital or not, in his physical or mental capabilities. This prevention would include the partially sighted and totally blind, partially and profoundly deaf, orthopaedically handicapped, mentally-retarded, the slow learners and those affected by multiple handicaps.

The available data are not sufficient to make an assessment of the number of children (or proportion of the total population) suffering from some form of physical or mental disability. The 1981 census gives an indication of the number of

persons who are totally blind (478 thousand), totally crippled (364 thousand) and totally mute (276 thousand). According to generally accepted estimates, the number of disabled *children* would be: 250 thousand blind, 250 thousand deaf, and 500 thousand with severe orthopaedic disability and two to three million mentally retarded, including cases due to iodine (thyroxine) deficiency.

However, in 1981, the National Sample Survey Organization undertook a nation-wide survey of disabled persons. Based on primary data collected in 5,409 villages and 3,652 blocks, in all states and five union territories, the survey yields important insights into the magnitude, causes and prevalence of three major disabilities—visual, locomotor and communication.

The survey estimates that in 1981, there were 12 million persons in the country with at least one disability, constituting about 1.8 per cent of the total population. Locomotor disabilities accounted for the largest number (5.43 million) followed by visual disabilities (3.47 million), hearing (3.02 million) and speech (1.75 million).

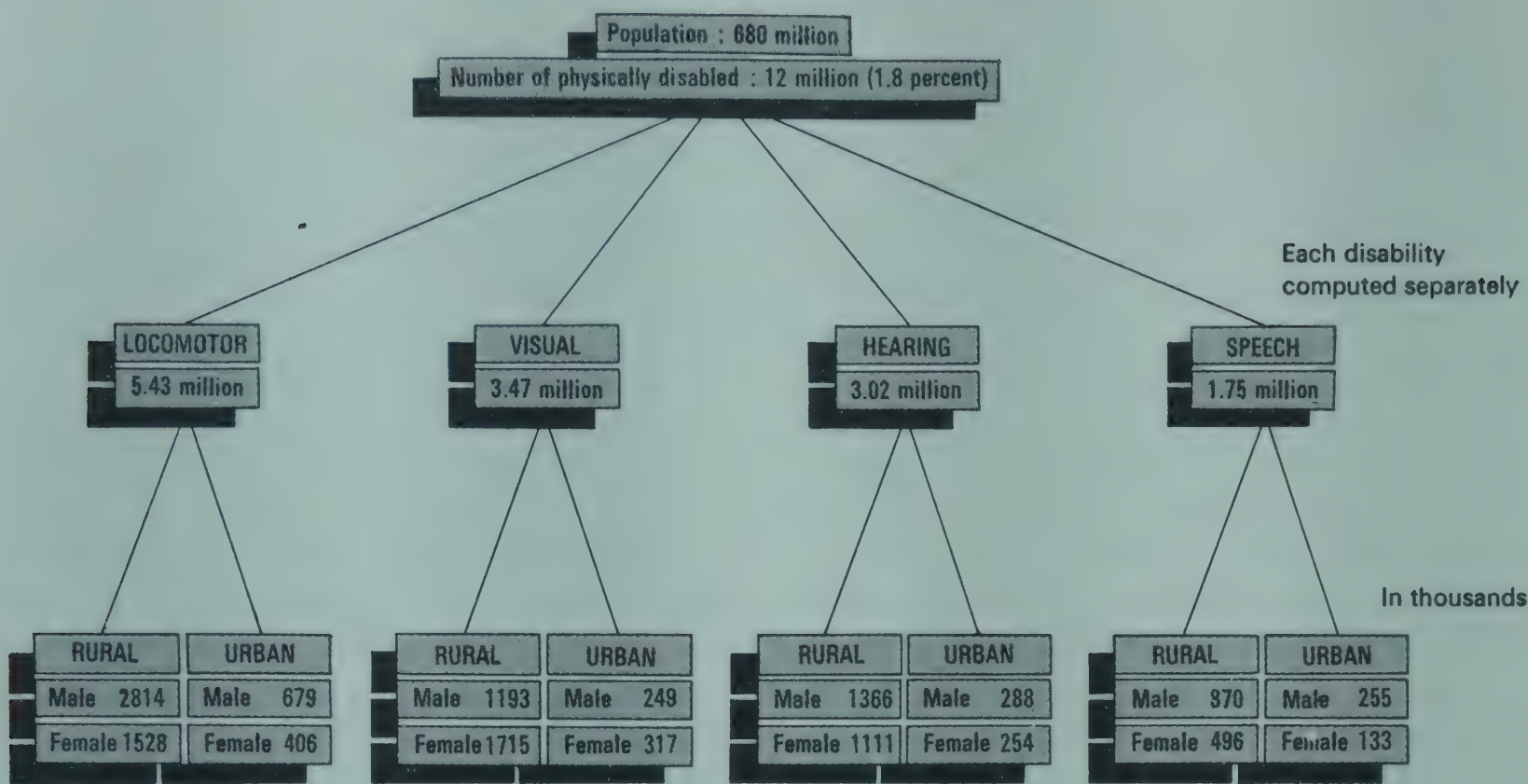
The distribution of the total affected population by type of disability is given below.

TABLE 69
Number of disabled persons (in '000)

Type of disability	Total	Rural	Urban	Male	Female
Locomotor	5,427	4,342 (80.0)	1,085 (20.0)	3,493 (64.4)	1,934 (31.6)
Visual	3,474	2,908 (83.7)	566 (15.3)	1,442 (41.5)	2,032 (58.5)
Hearing	3,019	2,477 (92.0)	542 (18.0)	1,654 (54.8)	1,365 (45.2)
Speech	1,754	1,366 (77.9)	388 (22.1)	1,125 (64.1)	629 (35.9)
Physical (at least one of the above)	11,939	9,672 (81.0)	2,267 (19.0)	6,796 (56.9)	5,143 (43.1)

Note: Figures in brackets are percentages.
Source: National Sample Survey, 1981

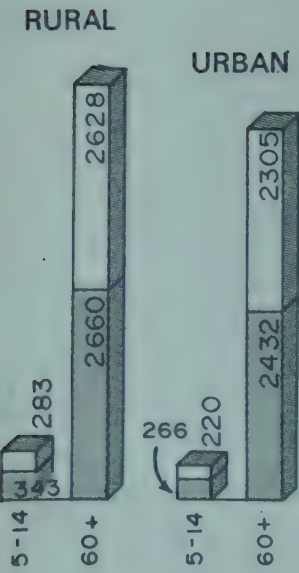
NUMBER OF THE DISABLED



physical disability

PREVALENCE

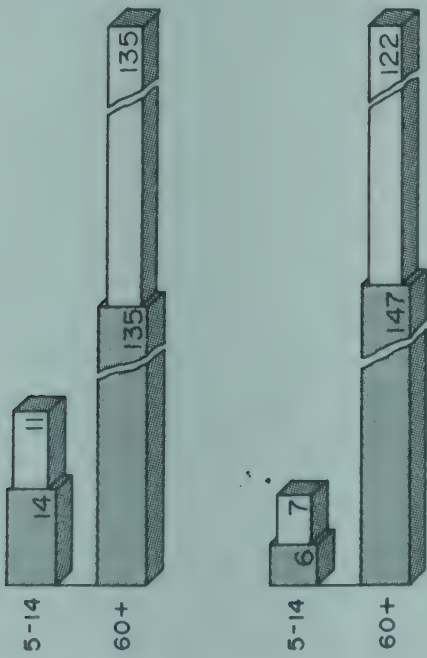
MALE
FEMALE



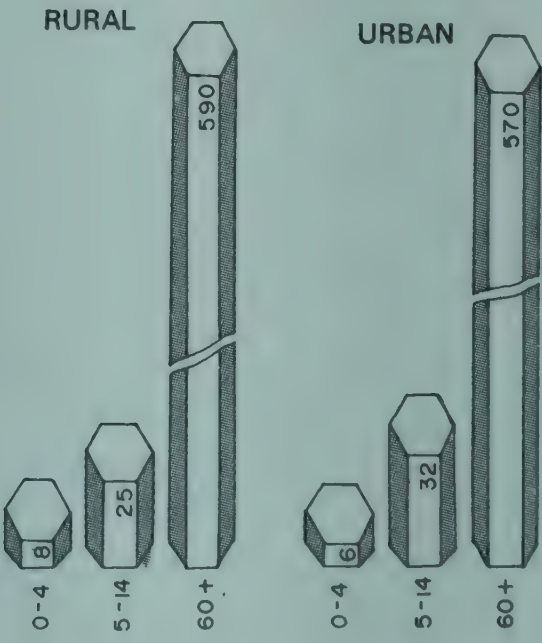
INCIDENCE

RURAL

URBAN



DISTRIBUTION
(by age at onset of disability
per 1000 disabled persons)



Source : Government of India,
National Sample Survey, 1981

Disability seems to be a predominant problem of late adulthood and old age.

The differences in prevalence rates in the 0–14 age-group as compared to 40 years and above are most evident in visual disabilities followed by hearing, locomotor and speech disabilities in that order.

Prevalence rates of disabilities in *children* reflect a difference from aggregate estimates of the type of disability in that, locomotor disabilities are most prevalent followed by communication and visual disabilities, in that order.

TABLE 70

Prevalence rates in children (per 100,000 population within that particular age group)

Disability	0–4		5–14	
	Rural	Urban	Rural	Urban
Locomotor	435	540	676	718
Hearing	—	—	314	244
Speech	—	—	411	429
Visual	39	25	66	87

Causes of disabling conditions differ with situations. So will solutions. In India the main causes of disability which are least under control are the cases which most affect children and women who are pregnant: for example infectious diseases, malnutrition, accidents and injuries before or at birth. The young population is growing rapidly and these causes when they occur early in life have the potential to create severe and multiple disabling conditions. The increasing disability burden on the country outstrips the limited capabilities of present services.

Another special factor in the disability situation in India is the rural nature of the population. Most of the patterns for providing rehabilitation services and organizing preventive measures have been developed here, as elsewhere, in urban conditions. These patterns require centralized facilities, highly trained personnel, specialized equipment and highly organized service systems. These are appropriate under conditions of good communication, high literacy and educational services. So, different approaches have to be developed for rural areas, taking into account the close link between childhood disability and poverty in the family.

Disability prevention, detection and intervention is a multi-disciplinary and multi-sectoral endeavour involving the sectors of nutrition, health, education, employment, social and child welfare and within these sectors of several specialized disciplines. Thus, an effort to prevent disability will be an appropriate and accelerated extension of the activities in these sectors.

For example, use of iodinated salt for cooking instead of common salt, would prevent children from being born with serious thyroid deficiency which would lead to varying degrees of defective development and maturing of the brain. Recent observations in the Gonda district of Uttar Pradesh show that four per cent of the children born in this severely endemic area are thyroid deficient at birth due to iodine deficiency. Thus iodination of salt would not only prevent children from being born cretins but also reduce the lethargy and enhance the productivity of some 120–170 million people living in the known goitre endemic regions in India.

Similarly, immunization against polio and other childhood diseases, obstetric care and other maternal and child care services, and regular intake of vitamin A by children can prevent a range of disabilities from the orthopaedic to the visual.

Two elements of the needed approach are clear:

- The effort must centre on the family, so that preventive care starts in time and extends to all the needed aspects.
- Secondly, preventive services for the child have to be coordinated across conventional social service sectors. Neither the government nor the voluntary sector has so far been able to devote attention or apply resources to an extent warranted by the recurring incidence of childhood disability.

Once a disability occurs, the effort on treatment and rehabilitation becomes prohibitively costly in time and money. However, given the size of the disabled population, there is no alternative to organizing support for those already disabled. The aims of prevention and rehabilitation are, in one sense, essentially the same: to *prevent* as much disability and as much of its consequences as is possible.

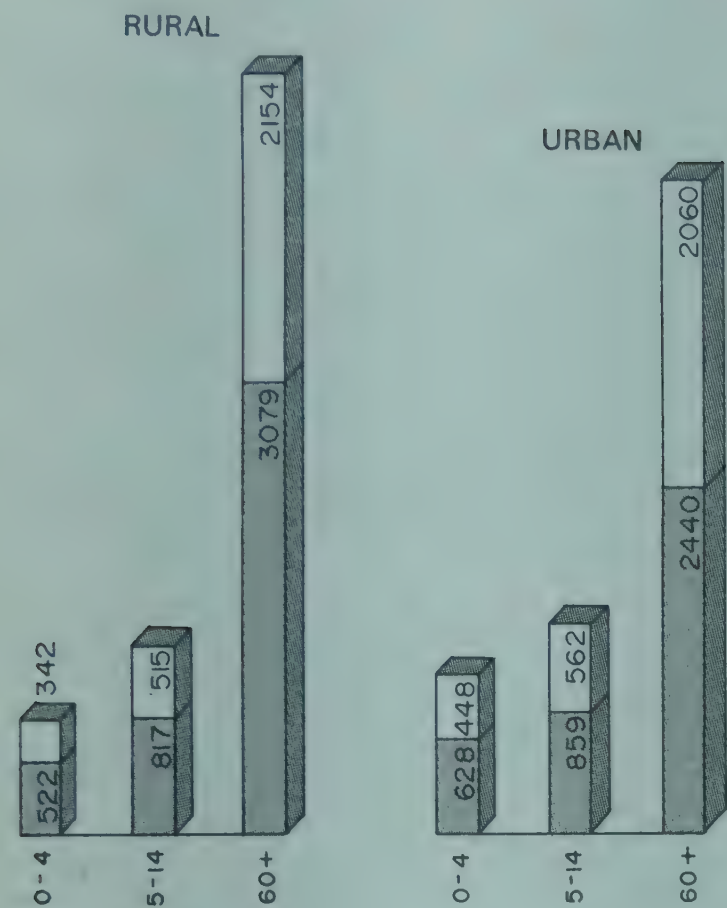
While some services for the disabled exist in the voluntary sector, with or without government support, the coverage of these is grossly inadequate to meet the needs of the numbers of the disabled—children or adults. It would be true to say that the existing rehabilitation services are limited in number and mostly to urban areas.

The government role may be seen in the following supportive activities:

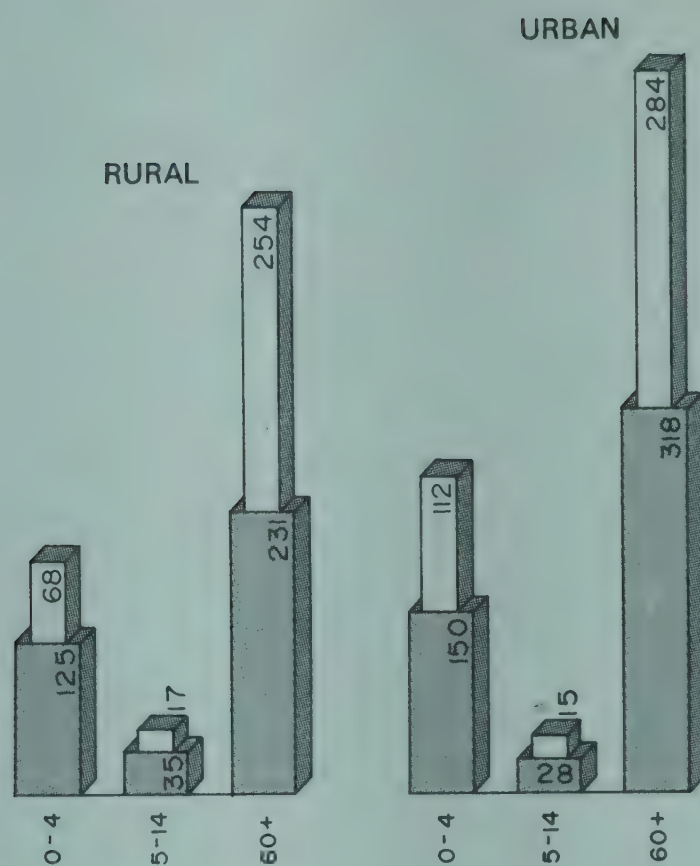
- Grants-in-aid to voluntary agencies are given mainly as organizational support. During 1982–83, the central government gave such support, amounting to Rs. 17.5 million to 138 agencies—to the benefit of nearly 34,000 disabled persons, including children.
- Assistance for aids and appliances (educa-

locomotor disability

PREVALENCE



INCIDENCE



MALE
FEMALE

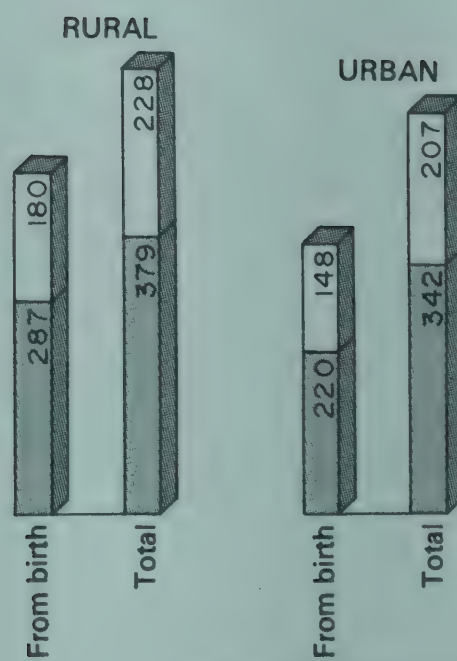
hearing disability

PREVALENCE



speech disability

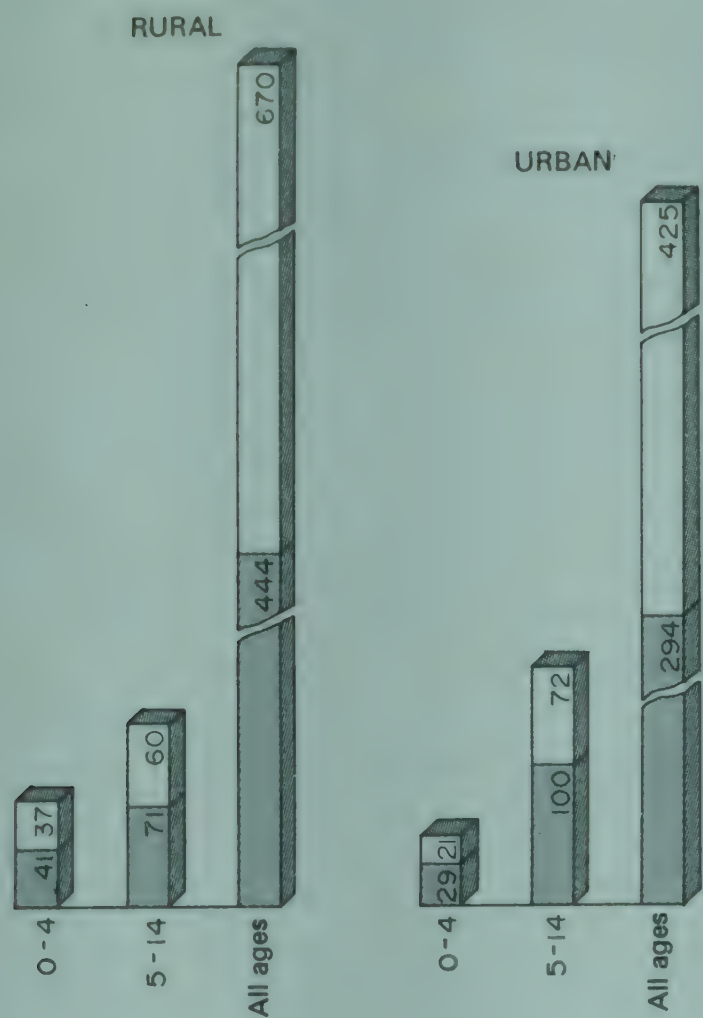
PREVALENCE



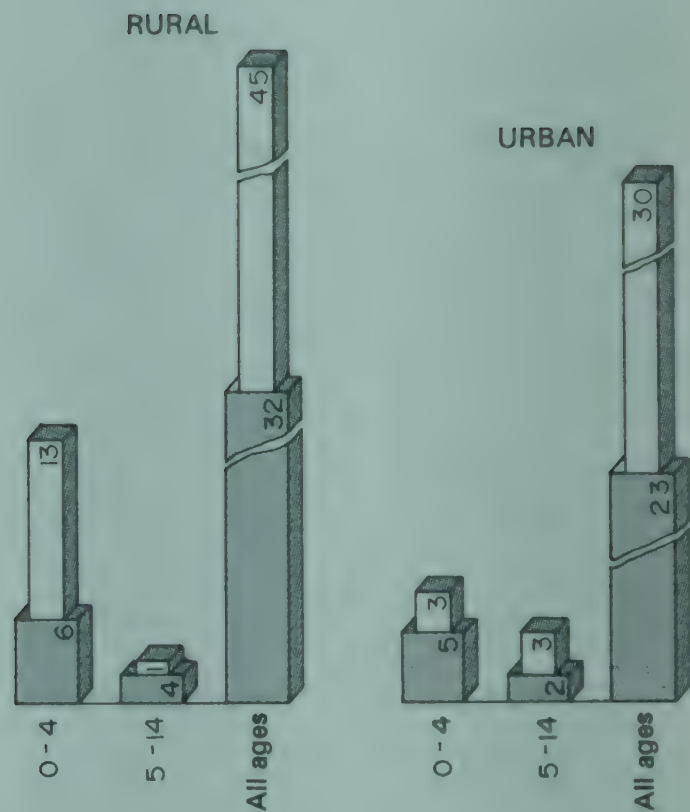
Source: Government of India,
National Sample Survey, 1981

visual disability

PREVALENCE

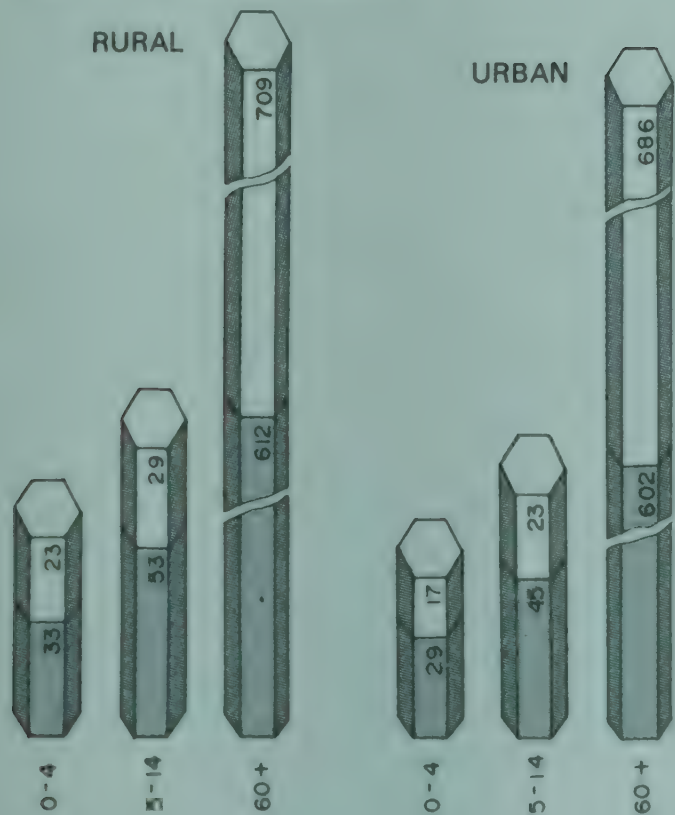


INCIDENCE



DISTRIBUTION

(by age at onset of disability per 1000 disabled persons)





PREVALENCE RATE :

$$\frac{\text{NUMBER OF THE DISABLED}}{\text{ESTIMATED TOTAL POPULATION}} \times 100,000$$

INCIDENCE RATE :

$$\frac{\text{NUMBER OF THOSE DISABLED IN THE PAST YEAR}}{\text{ESTIMATED TOTAL POPULATION}} \times 100,000$$

MALE 
FEMALE 

Source: Government of India
National Sample Survey, 1981

tional, recreational, vocational, mobility...) were provided for at a public cost of Rs. 10 million in 1982–83, to some 23,000 persons through 45 voluntary agencies.

- Another central government scheme relates to the scholarship for the physically disabled, the number of scholarships during 1982–83 (for the ninth grade and above) was 13,000, to a total value of Rs. 6.5 million. This is apart from state government support for the lower school grades.
- During 1982, nearly 10,000 disabled persons were helped to find employment through special employment exchanges for the disabled or special units in the general employment exchanges.

In the voluntary sector the number of agencies, around a thousand, are active in working for, or with the disabled. Among these, some 600 agencies and about 200 associations pay attention to childhood disability. Many of them are small and operate at the district and local levels. Broadly they can be grouped in the following categories: international agencies operating in India; national federations of voluntary agencies brought together by a common aim; associations of professionals like paediatricians, therapists, Rotarians and Lions; and, finally the small local level voluntary associations whose main objective is service of those most in need.

Several national institutes have been started by government for disabled persons: at Dehradun for the visually handicapped; Calcutta (orthopaedic); and Delhi (physical). Two more are coming up at Bombay (hearing) and Hyderabad (mental).

The major objective of these institutes is to conduct research into important aspects of education, training and rehabilitation and the social aspects of prevention. Apart from research they will also be engaged in training teachers. A national institute for prosthetic and orthotic training functions at Olatpur in Orissa. It is mainly a training institute for orthopaedic surgeons, bio-engineers and technicians. Artificial limbs and appliances are made at several centres, the most important being the public sector undertaking at Kanpur.

While hardly any services reach disabled children in rural areas, social consciousness seems to be broadening to include a practical concern for all disabled children, and even more significant, for preventing childhood disability. As a strategy, special schools for disabled children, are assessed as of limited value both from the educational and economic viewpoints. Integration at school and in vocations are increasingly the expressed goals of public policy in respect of those cases that have not been preventable.

2 Destitute children

The number of destitute children in India is as unclear as the definition of destitution. A child whose parents are unable to discharge their responsibility towards him on account of poverty, ill health or lunacy; a child without parents or any near relative or any means of subsistence; a child forced into begging or hazardous occupation; a child whose parents indulge in prostitution, drunkenness or crime—these represent degrees of destitution, with varying economic, social and psychological consequences.

It is not easy to be certain if, or how fast, the number of destitute children is growing. The number of destitute orphans was estimated at over seven million in 1971. Given the improvement in life expectancy since then, it is possible that there are proportionately fewer orphans today. However, the trend towards child destitution may be escalating, due to the evident pressures of population, urbanization and unemployment and the rapid collapse of the traditional social structure of joint families and close-knit socially conscious neighbourhoods.

As in the case of childhood disability, child destitution can be prevented only by tackling its root causes at source. This suggests that attention to children in destitution must combine with services for children suffering from other forms of deprivation like malnutrition, ill-health and lack of education, and that such multi-sectoral effort is best organized at the local level largely by the community itself.

Such a vision of an effective community structure remains rather distant in India as of now. It is only after Independence that government began to organize services for destitute children or to support pre-existing or new voluntary organizations active in the field. These services cover only a small percentage of the children in distress. And the quality of the support may be far from the best possible. Available statistics indicate that there are about a thousand *orphanages* catering to some 140,000 children. In terms of *institutions* as defined in the Children Act in force in some of the states, there are over 500 with a total capacity of over 35 thousand children; and these may or may not figure as orphanages.

It is widely agreed that institutions, even those functioning under the most scientific conditions can provide but a poor substitute for family life. In an attempt to promote alternative models of care and protection which would approximate to family life, the government started a centrally sponsored scheme in the mid-Seventies—for providing financial assistance to voluntary organisations who provide appropriate institutional or non-institutional services including free vocational training and foster care. The scheme envisaged

use of community resources as well as bringing destitute children closer to other children through the process of development. The Sixth Plan target under the scheme is to support the maintenance of 46 thousand children through 777 voluntary organisations. The Central Social Welfare Board as well as various non-governmental agencies, also sponsor children's homes for orphans including foundlings.

Destitute children below five years of age obviously need closer attention than others. Services for them appear to be the weakest—probably because of the specialized inputs needed for nutritional and health support.

A number of factors argue for non-institutional services, which aim at restoring the child to the natural family with needed support as the first concern. Support for the maintenance of the child in its own natural family could be a matter of government support, as much as sponsorships by philanthropists. Foster care, to tide over a temporary period of crisis, should also be increasingly welcome. And in case where there is no natural family to which the child can return, adoption in a family environment suitable for the development of the child's potential would be the logical option.

There are a number of reasons—social and legal—for not availing of these options fully or readily. For example, foster care has not become popular due to several factors; such care by families who are not kin is still rather unconventional in the social system; most agencies have neither experience nor expertise in overseeing this kind of work; the financial incentives offered by government to families have generally been unrelated to the actual expenses that would be incurred by the family of the child.

Much the same way, in the absence of an adoption law in the country applicable to all communities, thousands of adoptable children go without the benefit of an enabling law. Also it is not easy, without a legal safeguard, to ensure that the needs of adopting parents do not override the interests of the child to be adopted.

Whatever be the demerits of institutional care, it is clear that institutions for destitute children are unlikely to disappear as long as children become destitute. Once full development of the child rather than a charitable response to his condition becomes the main criterion, it would be logical to relate existing or new institutions in a progressive way to the neighbouring community and to make the best use of them to mediate the process of development by helping children back to a home—their own, or an approximate alternative.

It is also clear from past experience and current evidence that the vanguard of necessarily decentralized interventions on behalf of the desti-

tute child, must be voluntary initiative of the community. This needs to be backed up as necessary by the resources of the state.

3 Child labour

Children from poor families are compelled to join the labour force by the need to supplement the family income. This problem is complex with demographic, social and economic implications. In families with high fertility and low income, children have to work out of economic necessity. Indeed, such a situation stimulates child labour due to the perceived economic value of children. And, a traditional society provides fertile ground for employing children; helping as farm hands, for example, does not require much skill or training. This results in low levels of learning and poor preparation for adult life.

India has the largest number of the world's working children. Based on the 1981 Census data, the estimated figure is 14.5 million children below 14 years of age, or 5.5 per cent of the total child population. The participation rate in rural areas is 6.3 per cent and in urban areas 2.5 per cent. A 1983 estimate states that about 17.4 million children are working and 90 per cent (about 15.6 million) of them are in the rural areas.

In agriculture, children work as helpers in sowing, weeding, harvesting and threshing. A majority of them are casual workers. Some of them do domestic work or help in road construction, well-digging and house building. A large number of children are employed on plantations. In rural areas, it is estimated that children work on an average 211 days a year while men and women work 277 and 156 days respectively. Invariably, wages are exploitatively low, generally less than 50 per cent of the already depressed daily wage for the adult male.

The child labour participation rate varies among the states. In rural areas the participation rate for the male child varies from one per cent in Kerala to 11.7 per cent in Andhra Pradesh. Among girls the participation rate in the rural areas varies from 0.3 per cent in Punjab to 10.5 per cent in Andhra Pradesh according to a 1978 survey.

The prevalence of child labour depends on a number of factors: like the type and intensity of cultivation, availability of adult labour and the economic, social and cultural conditions in the village. In urban areas, there is an interesting finding that child labour participation decreased with the increasing size of the town—except in the case of small towns.

A large number of children in India are employed in the unorganized sector partly due to the legal restrictions in employing them in the organized sector. So they are found commonly in

small plantations, wayside restaurants and small hotels, cotton ginning and weaving, carpet weaving, match-making, stone breaking, brick-kiln, handicrafts and automobile and metal workshops. Child labour has increased sharply both in the traditional handicraft as well as in the newer labour-intensive industries.

The working conditions for child labour are usually harsh. For example, it has been found that about 45,000 children between the ages of 3½ years and 15 years work for almost 12 hours a day in the match and fireworks industries in cramped environments with hazardous chemicals and inadequate ventilation. In the bidi (leaf cigarette) industry, children, eight to 12 years of age, and sometimes even those between five and eight years, put in long hours and often contract chronic bronchitis and tuberculosis.

Surveys in various centres of cottage and handicraft industries have shown high incidence of diseases such as bronchitis, anaemia, tuberculosis, asthma and eye diseases. These are due, among other hazards, to the system of piece-rate compensation making the children work at a feverish pace to increase their earnings.

A 1979 report of a government-appointed committee felt that unless a systematic evaluation was made from time to time in respect of jobs in which children were employed and certain purposeful policy decisions were taken to meet the deficiencies, the existing situation was not likely to undergo any directional, qualitative or quantitative change.

It also pointed out that mere enactment of laws would not mitigate the harshness of child labour. There were several inadequacies in the administrative structures entrusted with implementing the law. It therefore suggested the need to involve social workers, voluntary organizations and trade unions as well as parents to assist legal enforcement.

The committee felt a necessity to have organized forums to ventilate problems of working children. Removal of adult unemployment, ensuring minimum wages, an educational policy relating the curriculum to vocational training, medical and health support, ensuring higher nutrition levels, housing facilities, recreation and cultural activities and protection from health hazards were identified among necessary steps in facing a situation in which children are forced to work.

Chapter IX

Communication

1 A development resource

Communication is the means to reach India's nearly 600,000 villages, to trigger the people's urge for self-development. Just as economic benefits of industrial progress did not diffuse, as expected, through social layers down to the poor, new knowledge for rural uplift does not automatically permeate the village through the mass media or other means. One-way communication practices (sometimes oversimplified and assimilating advertising techniques), have often resulted in greater benefits for the more advanced sectors of the community than to its more marginal sectors, thereby increasing the gulf between the rich and the poor. The developmental challenge lies in opening up possibilities which exist in principle, to extend communication from a minority to all of the population. As has been said, "Full use of communication in all its varied strands is vital to assure that humanity has more than a history... that our children are ensured a future".

2 The community level

By far the most potent means of communication in India, even in this era of scientific achievement, are the traditional forms. The role of parents and peers, school teachers and community leaders is decisive in initiating the young into the community and its life. For instance, interpersonal, rather than mediated communication, propelled the Gandhian movement for national freedom. It has also been shown that traditional forms of communication can be the most effective in breaking some of the barriers created by tradition itself—like superstitions, archaic perceptions, unscientific attitudes, and social evils like the dowry system, untouchability, alcoholism and discrimination against women.

India has a rich heritage of song, drama and dance which is alive and growing with a strong foundation in native talent and a close relation to contemporary happenings. The village still has its minstrels, balladeers, story tellers, puppeteers, and itinerant street theatre groups. Making

communication democratic would require community structures to promote and relate it to the process of development. What form such structures may have and how they may be shaped are issues not yet adequately addressed, but experimented with by small groups.

3 The mass media

Communication has several identified functions: information, socialization, motivation, debate and discussion, education, cultural promotion, entertainment and bringing together of persons, groups and nations. As a means of fulfilling these varied functions, the mass media in India represents a large and growing potential. Even at a literacy level of a little over a third of the population, newspaper circulation has crossed the 50 million mark—contributed by over 1,200 dailies and nearly 18,000 periodicals, in 84 languages, including the 16 principal languages.

The estimated radio audience is about 250 million. The All India Radio (AIR) produces programmes from 86 radio stations and beams them from 160 transmitters to 78 per cent of the country's area and 89 per cent of its people. It broadcasts 250 bulletins a day in 19 languages and 35 tribal dialects. To encourage local access to, and participation in radio programming, low-power radio stations are being established at the district level. Over 70,000 schools tune in to programmes related to school curricula.

Television (Doordarshan) operates from seven fullfledged transmitting centres, five relay stations and seven transmitters for rural telecast. For the use of the Indian satellite (INSAT), more production centres are being added. The INSAT 1B programming is to be fully operational by 1985 with 2,000 community receivers and 2,000 direct reception television sets installed in rural areas. These apart, there are 20 low-power transmitters carrying national programmes: 113 more will be installed by the end of 1985, so also 26 more high-power transmitters. The television coverage is presently about a fifth of the population, yet limited to about seven per cent of the country's area.

India is the world's leading producer of feature films, over 700 a year in more than 20 languages, screened at nearly 12,000 cinema halls, for an audience of some 70 million a week. The majority of these films use social themes; a few, around 20, centre on children.

The printing industry in India employs over 533,000 persons, including about 21,000 in newspaper establishments and over 34,000 in government presses. The annual production of books, by number of titles, is around 12,000.

The growth of the mass media continues at a dramatic pace, both in the government and the non-government sectors. In the government sector there are several media units, other than radio, television and films: such as for publications, press information, advertising and visual publicity, song and drama, photographs, field publicity and children's films. Each of these has an impressive outreach and a much larger potential.

The basic infrastructure in modern communication is provided by the telecommunication and postal systems. These are used not only by the public, the industrial and commercial sectors and voluntary social organisations, but also by the extension wings of various ministries for developmental purposes, like agriculture, health and family welfare, education and social welfare and rural development.

4 Options are open

The communication network in India is evidently one of the largest functioning in the world today—even at a low literacy rate of 36 percent. It can be used for better or for worse: for, media institutions are no more neutral than the messages transmitted by them.

Human development being the primary consideration, the goal of communication is communion. Ideally, people *relate* to one another through media, rather than use media to dominate. In this perspective, several insights have been brought to light. A few of them are summarised below in the context of aspirations to survival, health and development, particularly of those in poverty.

In the struggle for living, there are immediate hurdles to be crossed, without waiting for changes in the economic and social structures. For example, debility of a pregnant mother is a fact of life among the poor, which they take as inevitable. Yet they will be able to alleviate her, and her baby's condition, despite the poverty, if they know that a marginal redistribution of the family diet will make a substantial difference to her health. The change will be more dramatic if they are informed about, and also helped to gain better access to, new sources of nutrition. Provid-

ing material help is necessary but in the absence of communication to activate people, it remains insufficient for durable change in their condition.

To take another example, when epidemics like dysentery and jaundice come, as they still do, the usual social response is limited to treatment which may happen to be too late for too many. But the deeper causes like unhygienic practices and harmful dietary habits remain to reinvoke the disease. The preventive potential of relevant information is under-estimated and under-used. This is one reason why the *provider approach* and the *dependency relation* continue.

Poor families often assume their lack of control over infant deaths, caused in large numbers by preventable infections. But if they are aware that vaccines exist and they have a right of access to them, they will not resign themselves to their helplessness. The facilities to immunize children will be of little avail unless people are moved—by communication—to make eager use of them.

The possibility for the power of communication to liberate the minds and potential of people through *critical awareness* is present in every field linked to human development, be it women's emancipation, environmental sanity or functional literacy.

The link between education and communication is organic. Communication generates an educational environment, far beyond the educational system. In the absence of education, illiteracy persists, limiting communication abilities at the threshold. Conversely, expansion of education provides a basis for wider and deeper communication. The resultant imbalances in communication are remediable through universal education. By strengthening the growing links between communication and education, new social possibilities are opened up and individuals and communities are enabled to work out better their own future.

Lately a large number of social groupings—held together by common interests, opinions and purposes—are increasingly involving individuals in collective affairs: for example, political parties, trade unions, religious communities, professional associations and women's and youth organizations. With a permanent social presence, they make for a plurality of ideas, many of them getting translated to action. And, their potential to enhance the quality of social life depends on their capacity to communicate through public, or their own, channels.

Communication is becoming a matter of human right. The right to communicate goes beyond the right to receive communication or be given information. The crux of the challenge facing policy makers and professionals is to relate the existing vast and diverse network to

available information and knowledge relevant to changing the human condition.

5 Future imperatives

Communication is not an autonomous or separate sector. Interdependence is its hallmark. To make communication supportive of development, the following aims need to be promoted:

- communication must become participatory;

- it must outgrow unisectoral channels in or outside government; and
- communication policies must not be limited to information, or to the mass media, but be related directly to the development needs of the society.
- traditional and modern media must be made to mutually support, to become a common resource of people's development.

Chapter X

Perspectives

1 Policy orientation

Certain policy trends are emerging at the national level from the vast but mixed experience of recent years. For instance:

- the national planning process increasingly reflects the implications of a major lesson of experience; namely, economic and social progress must move in even step in support of human development;
- the interests of children are specifically finding a place of priority in national planning;
- broad spectrum public policies in support of children are taking shape across the different social service sectors;
- the need has been recognized for coordination at the political level of necessarily decentralized development activities on behalf of children.

The Constitutional directives of state policy in relation to children are being reflected in sectoral policies such as for education, health, nutrition, water supply and sanitation—even where time bound targets of national achievement have not yet been laid down.

It is possible to envision an improvement in the situation of children by, say, the end of the century, on the assumption that national policies will be translated into reasonably successful programmes through the five-year plans. The analysis in the preceding chapters suggests that this assumption is realistic, given firm conceptual and political foundations of development.

2 Contours of change

By the turn of the century, the circumstance and condition of child life can be visualized in terms of the following carefully defined aims, which have to be worked for through people's programmes in and outside the government sector. For example:

Through better maternal nutrition and improved care of maternal and child health, the infant mortality rate can be reduced by at least half.

The percentage of babies with birth rate below 2,500 grams can be substantially reduced; so too the maternal mortality rate to about half the present level.

The production and public distribution of supplementary nutrients, including iron fortified salt, folic acid, iodinated salt and vitamin A can improve to a level when all pregnant mothers and children below six years will have access to them.

Between 85 and 100 percent of all eligible children can be immunized against diphtheria, tuberculosis, whooping cough, polio, tetanus and measles. All pregnant mothers can be immunized against tetanus. Deliveries can be handled, as a matter of course, by trained birth attendants. And perinatal mortality can be reduced to a range of 30 to 35, from about twice that figure currently.

The incidence of blindness can be reduced by more than threefourths of the present rate of 1.4 percent. The proportion of arrested cases of leprosy can be four times more than the present level of 20 percent of the detected cases. A similar improvement against tuberculosis is possible.

As against only 12.5 percent children of pre-school age now availing some form of organized learning opportunities, more than half of all of them can benefit. And, at the preschool centre, the child care worker can detect disabilities; and the mother can be trained in child care and how to manage the disabled child at home and to integrate the child with others at school.

The present proportion of 82 percent children enrolled in primary education can improve to cover all, or nearly all, children of the relevant age. The school environment and quality of education can also improve and the dropout rate can reduce to a negligible extent.

The progress in safe water supply and sanitation can enhance the quality of child life—through full coverage of all urban and rural areas for clean drinking water supply and 80 percent coverage for urban sanitation and 25 percent for rural sanitation, if not by the end of this decade, during the next.

It is within the realm of possibility that the net reproduction rate can be one and the average

family size can be 2.3, by the end of the century. By then life expectancy could be some 12 years more than the present level of 52. And the overall literacy rate can be about double the present rate of 36 percent.

A number of concurrent developments can also take place—like a multifold increase in the number of women's organizations at the village level directly involved in development for children, from a few thousands to a couple of hundred thousands.

3 Lessons in strategy

The experience of developing countries with relatively low incomes, and of parts of India itself, suggests that development aims of the above order are not over-ambitious. Action on behalf of children need not, and cannot await the more protracted attempts to contain poverty. In fact the effort to promote the survival, protection and development of children will pull in the same direction as action against poverty. The knowledge and techniques by which this can be achieved are known and available. What is needed is the social organization to communicate them to the whole community and to activate it to mobilize its resources for child wellbeing. So far the prime mover for such development that has been achieved, has come from outside the community. The community can and must be its own engine of socio-economic change.

Among the constraints that come in the way of social change are the following two:

- Experience shows that socio-economic forces have not yet provided the poor with the gains of development, to any substantial extent;

- Secondly, the managerial, procedural and financial constraints tend to clog the administrative apparatus.

The response to these constraints must include decentralized planning and action within the framework of national policies. In tune with changes in policy, the budgetary priority for the social services sector has to be raised. And within each sector the needs of the deprived majority must receive the highest attention.

There appears to be a broad consensus in India on the need for a set of complementary strategies to be applied in a concerted way—increasing employment, meeting basic needs, reducing inequalities of income, wealth, status and opportunities, and raising the productivity of the poor. And if the development effort is not to be dissipated it is necessary to disaggregate the disadvantaged sectors and underserved areas for the purpose of meeting their basic needs on discriminatory priority. It is also increasingly realised that this task must involve non-government organizations and social groupings, in keeping with India's policy frame and democratic orientation.

Some of the most resilient ideas on self-reliant development have come from India earlier this century. And beyond these insights, lie a wealth of under-used development experience and institutional infrastructure. The conceptual basis of basic services for children is firmly established. The approach is not an isolated strand of development strategy on behalf of children, but binds conceptually together with primary health care and basic education, under the rubric of a democratic theory of development.



INDIA 1981
Number of Children (0-14 years) in millions.

STATES			
Andhra Pradesh	20.7	Meghalaya*	0.5
Assam*	8.9	Nagaland*	0.3
Bihar	29.0	Orissa	10.5
Gujarat	13.2	Punjab	6.2
Haryana	5.4	Rajasthan	14.6
Himachal Pradesh	1.5	Sikkim	0.1
Jammu & Kashmir	2.2	Tamil Nadu	16.9
Karnataka	14.7	Tripura*	0.8
Kerala	8.9	Uttar Pradesh	46.3
Madhya Pradesh	21.5	West Bengal	21.0
Maharashtra	24.1	Union Territories*	3.2
Manipur*	0.6		
		India total	272.0

*Projected figure,
SOURCE: Census of India, 1981

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Indicative Costs of Child Survival

In an attempt to quantify the approximate cost of critical interventions for child survival and development the following compact table has been worked out by UNICEF India for internal use in 1984. The table gives the estimated cost, coverage and probable impact of some selected survival and development interventions

Component	Cost per 100 000 Population		Cost per Beneficiary
	Initial	per year Later	
I. <i>Growth Monitoring and Supplementation (1)</i>			
(a) Weighing & screening	\$32,000	\$32,000	\$2.09 per underfive per year
(b) Selective feeding of underthrees	\$43,000	\$18,000	Initially \$32.54, later \$37.82 per child screened and fed (imputes total cost of weighing, screening and feeding onto those selected for feeding)
II. <i>Diarrhoea Management</i>			
(a) Reaching every home (the BRAC way (2))	\$12,000 (once only)	Not applicable	\$0.65 per household contacted
(b) Selective ORS (Oral rehydration salts) distribution for underfives	\$340 per year	\$340 per year	\$0.20 per year (10\$ per packet distributed)
III. <i>Communication for Parental Behaviour Change (3)</i>	\$65,000 per year	\$34,000 per year	Initially \$3.94, later \$2.05
IV. <i>EPI</i>			
(a) Full protection for underones (4)	\$20,000 per year	\$12,000 per year	Initially \$5, later \$3 per child 0-12 months
(b) Full protection for pregnant women and neonates	\$11,000 per year	\$7,000 per year	Initially \$2.50, later \$1.50
V. <i>Salt Fortification</i>			
(a) Iodination (5)	\$200 per year	\$200 per year	\$0.005 per year
(b) Ironization (6)	\$4,000 per year	\$4,000 per year	\$0.07 per year
VI. <i>Iron tablet distribution</i>			
(a) All pregnant women	\$270 per year	\$270 per year	\$0.06 per year
(b) All adult males (7)	\$1,100 per year	\$1,100 per year	\$0.06 per household
VII. <i>Mass periodic deworming</i>			
All under threes (8)	\$5,400 per year	\$5,400 per year	\$0.60 per year
Total	Initially \$194,310 or, say \$2 (Rs. 20) per capita Initial	Subsequently \$114,310 or, say, \$1 (Rs. 10) per capita recurrent	

Process and Coverage	Expected Impact
Monthly weighing of 90% of underthrees (and quarterly weighing of 36–60 months age groups)	* Improved parental and community awareness and skills to respond appropriately to young child's needs to ensure healthy growth
Temporary, selective food supplementation of underthrees with growth faltering to <i>prevent</i> malnutrition	* Annual reduction by more than 4,000 moderately and severely malnourished underfives * Annually 374 young-child deaths averted
All 18,000 households in 100,000 population	* 90% of households trained will have proper knowledge
ORS for 10% of episodes (more serious ones) in underfives (1,700 beneficiaries underfive per year)	* 98% will have proper skills * 40% will immediately adopt recommended practice * 50% immediate reduction in case fatality (annually 107 young-child deaths averted) * Substantial reduction in growth faltering/malnutrition
All households, person-to-person to one parent, with mass media support	* About 50% of target population to change existing KAP regarding health/nutrition/family planning in the direction of the desired KAP (knowledge, attitudes and practices)
All 4,000 children <i>before</i> their <i>first</i> birthday with 6 antigens	* Virtually complete prevention of EPI diseases, disability * 30% reduction in infant mortality from (120/1000 to 80/1000) * Substantial reduction in growth faltering/malnutrition
All 4,500 pregnant women with TT	* Complete prevention of maternal and neonatal tetanus
Blanket distribution to 40% of total population	* Complete eradication of Iodine Deficiency Disorders (IDD) now putting about 120 million Indians at risk of IDD (cretinism, deaf-mutism, mental subnormality, goitre and perinatal wastage)
Blanket distribution to 60% of total population	* Improved social and economic productivity * Reduction of anaemia and maintenance of healthy haemoglobin levels
All 4,500 pregnant women per year	* Increase in social and economic productivity (compared to anaemic population now estimated at 60% of women, 40% of men) * Reduction in pregnancy wastage and maternal mortality
One adult male "bread winner" per household (18,000)	* 20% increase in social & economic productivity; reduced morbidity
All children underthree, 4 times per year	* Reduction in malnutrition, and 3–25% increased availability of ingested (but wasted) calories hitherto

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